Volume 4
Issue 10

RISC USER

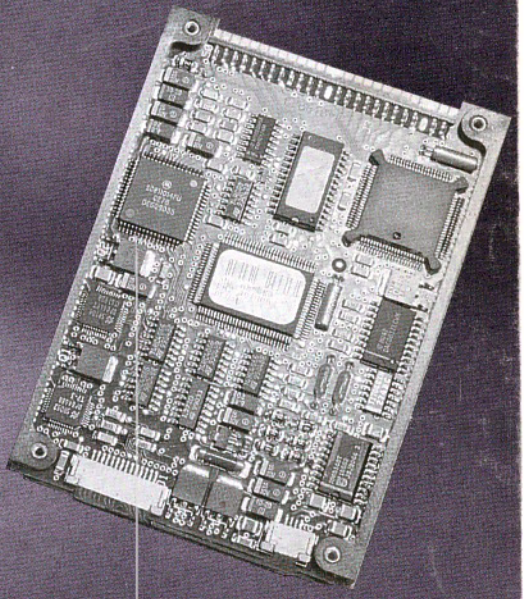
October 1991
Price £1.90

Desktop File Sorter

Procedure Library Manager

Multi-tasking PC Emulator

Laser Direct Hi Res Printer



Megabytes for All

The magazine and support group exclusively for user[s] of the Archi[medes]

Adver[tisement]

ISSUE 10
VOLUME 4
OCTOBER 1991

CONTENTS

FEATURES

Megabytes for All 8
Putting your Monitor to the Test 22
Time on the Arc 40
WP/DTP:
Printing Proportional Text Using Edit 47
Simple Text Printer Utility 48
The 80 Column:
A Printer Driver Page Margin Calculator 53
Into the Arc: Under the Desktop (Part 2) 55
C Notebook: News and Hints 59
Using ANSI C (Part 4):
Menus and Dialogue Boxes 61

UTILITIES AND APPLICATIONS

Number Base Converter 13
A Desktop File Sorter 29
Procedure Library Manager 37

REVIEWS

Acorn's Multi-Tasking PC Emulator 17
CC's Laser Direct Hi Res Printer 25
Archimedes Clip Art 33
Equasor from Computer Concepts 42

REGULARS

News 5
RISC User Disc contents 38
Hints & Tips 66
Technical Queries 70
Postbag 73
Personal Ads 74
Advertisers' Index 74

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EDITORIAL

BBC ACORN USER SHOW

*The major show of the year for all Archimedes owners has to be the **BBC Acorn User Show** at the Wembley Conference Centre, London, 11th-13th October. And this year's show look's like being a major event. Although we have no firm details at the time of going to press, there is every indication that Acorn will be making some major announcements about the Archimedes range at the show, with new machines on display. That alone must make this a show not to be missed.*

According to the organisers, all exhibition space has been taken up, and there are many other supporting events to entertain and relax visitors to the show as well. We shall have a total of three adjacent stands, one devoted to Beebug Retail, one devoted to our own hardware and software developments, and one for BEEBUG and RISC User magazines and associated products. These are stands 31, 32 and 33. All RISC User readers are most welcome to visit our stands, chat with staff, and see the latest product developments.

*RISC User readers will already be aware of **ArcScan III** and the associated library disc indexing Micro User and Acorn User magazines, and the more recent **Wimp Programmer's Toolkit**. The latest release in our growing range of low cost quality software for the Arc is **DeskEdit**, a very comprehensive multi-tasking Desktop text editor. This has a host of features (and many keyboard short cuts) adding word processor like facilities to text editing, with dedicated features for Basic and C programmers, including direct editing of Basic. More information on **DeskEdit** appears elsewhere in this issue.*

*We will also have two further new software products, which we expect to release very soon, on demonstration at the show, and we hope to have detailed information and demo versions of the **Volume 4 Special Disc**, which will be available at a special low price to RISC User subscribers from Volume 5 Issue 1 onwards. Anyone who purchased last year's **Volume 3 Special disc** will know what value for money these discs are.*

As usual, all subscribers will receive with the first issue of Volume 5 a complete printed index to the whole of Volume 4 (although ArcScan provides an even faster means of finding the right reference).

Remember that all our own products are offered at a discount to subscribers, just one more reason for renewing your subscription if you haven't already done so. If you read other magazines, you will be seeing all our products advertised there as well, but remember that these are prices before discount.

*As part of a purely internal move to foster future expansion, all magazine, book, software and hardware developments have, since 1st April, been incorporated in a new company called **RISC Developments Ltd**. Beebug Ltd. will henceforth deal only with retail sales. In future, therefore, you will see the RISC Developments name as publisher of BEEBUG and RISC User magazines (and any further books), and as developers and producers of software and hardware for the Archimedes range.*

With this issue we also say farewell to two member's of the magazine team, Glynn Clements our highly knowledgeable Technical Assistant, and hard working Technical Editor Alan Wrigley. However, both will continue to contribute on a freelance basis. Mark Moxon is our new Technical Assistant as from 2nd September.

M.W.

C

C Development system for the Archimedes & A3000

The C development system is a **complete C language** at an incredible price. It is ideal for beginners, but may be used by experienced C programmers to develop large applications.

The package includes a **multi-tasking editor** from which programs may be compiled and executed without leaving the desktop. In fact you can compile, link and run C programs at the press of a key.

The **full-featured compiler** is quick, easy-to-use and generates fast ARM code which may be linked to other programs libraries using the **object code linker**. Compiler errors are automatically highlighted in the editor for easy correction.

A very comprehensive range of Acorn compatible **RISC OS functions** is included, allowing complete WIMP applications to be written. New libraries of functions may be created, or functions added to existing libraries using the **library facility** provided.

Features include:

- Conforms to ANSI specification
- Easy to learn and easy to use
- Full feature editor similar to Edit
- Built-in ARM assembler
- Fast object code linker
- Ability to link 'in memory'
- Built-in Make utility
- Can run from the command line
- Library maintenance facility
- Auto error flagging in editor
- Auto link after compilation
- Links to shared C library CLIB
- Compiler/linker in single module
- Flexible configuration options
- Wimp, sprite, font functions etc.
- Projects for multiple sources
- Output assembler listing
- Conditional compilation

The full package includes a 200-page user guide, editor, compiler, linker, 14 libraries of functions, and example programs. Requires 1MB RAM and single floppy drive only.

Members price **£80.72** Inc. VAT

Stock code 0107
Please add £3.10 carriage.

Additional fonts for Ovation users

The following PostScript compatible fonts are available as an upgrade to existing Ovation users:

Curator Medium
Curator Medium Oblique
Curator Bold
Curator Bold Oblique
Bookmark Light
Bookmark Light Italic
Bookmark Demi
Bookmark Demi Italic
Chaucer Medium Italic

Please return your original Ovation Work disc.

Price **£8.81** Inc. VAT
Stock code 0091
Please add £1.00 carriage.

Star/Epson Colour Printer Driver

This RISC OS printer driver was developed specifically for the range of Star colour printers. It gives superb results on both 9 and 24-pin printers, and is ideal for all applications that use RISC OS printer drivers. It is a Release 2 driver, supporting various print resolutions and 'fancy' text printing, and is suitable for the following range of printers:

- Star LC24-200 colour
- Star LC-200 colour
- Star XB24-10 colour
- Star LC-10 colour
- Epson JX compatible
- Epson LQ & SQ colour

Price **£17.63** Inc. VAT
Stock code 0090
Please add £1.00 carriage.

Approved by Star Micronics Ltd.

Archimedes & A3000 from

RISC developments Ltd

117 Hatfield Road, St. Albans, Herts. AL1 4JS

• News • News • News • News

ACE COMPUTING MASTER TIME AND SPACE

CAD graphics specialist Ace Computing is launching *Einstein*, a complete design and animation system for £141.00 inc. VAT. Einstein is a multi-dimensional editor for 2, 3, or 4 dimensional graphic design, and includes a feature allowing the interactive manipulation of Bezier surfaces. According to Ace Computing, a Bezier surface is inherently 2D; if the whole surface is swept through space a 3D Bezier volume would be generated. A moving 3D object creates a continuous shape in 4D space-time - a 4D Bezier hypervolume. Einstein costs £141.00 inc. VAT and comes complete with a range of 3D fonts from Ace Computing, 27 Victoria Road, Cambridge CB4 3BW, tel. (0223) 322559, fax (0223) 69180. Upgrades will be available to existing Euclid and Mogul users.

ECONET TESTER

Hampshire based Alsystems has announced a low cost Econet network tester, the *FLAT box*, intended to reduce the time and effort needed to locate and rectify faults on Econet networks. Designed for use by non-technical personnel, the FLAT box includes a 'drop lead' tester to detect cable breaks and short circuits, multimeter sockets, terminator and internal clock test facilities. The FLAT box costs costs £90.48 inc. VAT and p&p from Alsystems, 47 Winchester Road, Four Marks, Alton, Hampshire GU34 5HG, tel. (0420) 87214.

PC CONNECTIONS

PC Connect is a new product from D.T.Software comprising two expansion cards, one for an Arc and one for a PC, which implement an extremely fast parallel interface through which the two machines can communicate. This allows the two machines to share resources (hard disc drives, printers and even networks, while the Archimedes board is able to drive the PC's keyboard input and to switch a single monitor between the two systems. The interface is fully supported by software supplied with PC Connect. It is claimed that by sharing resources it is possible to set up full Arc and PC systems at a lower cost, and to communicate between the two. PC Connect costs £199.69 inc. VAT from D.T.Software, Freepost, Cambridge CB3 7BR, tel (0223) 841099.

NEW FROM THE SERIAL PORT

The Serial Port has announced a number of new products which will be available or demonstrated at the Acorn User Show. These include a podule version of the Econet MIDI Sampler interface, an Econet socket based MIDI interface (fully compatible with Acorn's standard MIDI podule), a low cost parallel port sampler, an updated version of ArcTerm 7 with support for the French Teletel service and other new features, and a preview of a new suite of assembler/debugger/compiler/editor programs for the more serious user.

The Serial Port's stand will also feature its ever increasing range of SCSI and IDE adaptors and devices. For more information on Serial Port products contact QD Enterprises Ltd., 30-33 South Street, Chichester, West Sussex PO19 1EL, tel. (0243) 531194, fax (0243) 531196.

HIGH CAPACITY FLOPPIES

Arxe Systems Ltd. is another company announcing a range of new products for the BBC Acorn User Show. *QuadFS* is designed as an alternative to the ADFS for floppies, and will allow the use of 1.6 MByte discs as well as the more usual 800K ADFS discs. The disc interface and supporting software will sell for about £200.00 plus VAT.

MultiFS v2.00 supports 1.44 MByte and 1.2 MByte PC discs and will cost about £50.00 plus VAT. *MacFS* allows the Archimedes to both read and write high density 1.4 MByte Apple Macintosh discs, and comes with a number of file conversion utilities. Projected price is again around £50.00 (plus VAT).

Other new products include *J-Comp*, a graphics compression tool at £19.95 (inc. VAT), *ProDi* Desktop assembler, at £29.95 inc. VA tracer (to be demonstrated at th

ACORN USER SHOW '91

* THE SHOW *

*A unique Show dedicated to the world of Acorn and BBC computers with both existing and potential users in mind.

*A Show which brings together the best and latest in the Acorn market ranging from the widely used and much loved 8-bit computers right through to the up-to-the-minute 32-bit machines.

*A Show fully supported by Acorn Computers themselves who will be sponsoring many of the technical and informative activities.

*A Show presented in association with BBC Acorn User Magazine, a long established and respected publication, well informed on BBC and Acorn computer matters.

*A Show designed to entertain as well as provide opportunities for purchasing a wide variety of hardware and software, often at special Show prices.

* A Show NOT to be missed!! *

* THE FEATURES *

*Fantastic Theatre providing on-going product information, computing techniques and tips, entertainment, competition prizes, celebrity spots and much more, all with a light hearted flavour.

*Personal appearance by CAROL VORDERMAN all day Saturday and LINFORD CHRISTIE and friends on other days subject to sporting activities.

*Computer problem "Clinics".

*Fabulous Games Arcade and High Score competitions. (Try the VERY LATEST games for the Archimedes).

*BBC Acorn User Magazine "Editor's Office".

*Schools Projects including in-house production of the unique BBC Acorn Show newsletter.

*Club Corner.

*Mock Classroom with Schools' activities.

*Rest-Your-Legs lounge area.

*Competitions.

*FREE Show Guide with all adult tickets.

MUCH, MUCH MORE

* THE EXHIBITORS *

*Exhibitors represent many of the leading companies in the Acorn world. You will find;

*Software houses and distributors with programs covering the range from games right through to sophisticated desk-top publishing or image processing.

*Acorn appointed dealers with their own special offers and deals, and some from Acorn Computers themselves.

*Special peripheral manufacturers and distributors.

*Publishers and Clubs.

*Consumables and Accessories.

MANY MORE

* THE VENUE *

There are fewer places in the nation better known than Wembley. Renowned for its Stadium, Event, Exhibition and Conference facilities, the BBC Acorn User Show '91 will provide both visitors and Exhibitors alike with a first class venue.

Excellent Rail, Road and Air links make it easy for visitors to reach Wembley. Massive on-site parking (NCP) is available for those travelling by car and a free shuttle bus will operate from Wembley Park Underground Station.

A variety of snack bars and restaurants will provide light refreshments throughout the open days.

* THE CONCERT *

A FABULOUS 60's CONCERT will take place in the Grand Hall of the Conference Centre on Friday evening (11th October 1991) with legendary groups HERMAN'S HERMITS, and THE BRUVVERS with the great MIKE BERRY.

Bring back the memories, sing along with your old favourites and generally let your hair down. See the Exhibition during the day and stay on for the Concert in the evening. DON'T MISS THE FUN!

Why not see the Concert and stay in London overnight and visit the Exhibition on Saturday. A great way to enjoy a trip to the Big City.

Concert tickets are all one price at a modest £10.50 each and are available from the Wembley Box Office - Tel. 081 900 1234.

* TIMES AND PRICES *

Tickets at Door:

Adult	£6.00
Under 16	£4.00
Family (2 Adults & 2 Children)	£16.00
Under 5's	FREE

Advance Tickets - use coupon below

FRIDAY 11th October 1991 - 10.00 a.m. - 6.00 p.m.
SATURDAY 12th October 1991 - 10.00 a.m. - 6.00 p.m.
SUNDAY 13th October 1991 - 10.00 a.m. - 5.00 p.m.

Please note - Pushchairs are not allowed in the Exhibition Halls.

WEMBLEY
CONFERENCE AND
EXHIBITION CENTRE

ADVANCE TICKET APPLICATION FOR THE BBC ACORN USER SHOW

Please Rush me:
..... Adult Tickets at £5.00 Advance Discount Rate
..... Under 16 Tickets at £3.00 Advance Discount Rate
..... Family Tickets at £13.00 Advance Discount Rate

I enclose Cheque/Postal Order for £..... made out to SAFESELL EXHIBITIONS LTD

NAME .....

ADDRESS .....

..... POSTCODE .....

RETURN THIS FORM TO SAFESELL EXHIBITIONS LTD, MARKET HOUSE, CROSS ROAD, TADWORTH, SURREY, KT20 5SR TEL. 0737 814084

number of games (*Bambuzle*, *blitz!*, and *Scorpius*) at prices ranging from £19.95 to £27.95 (all inc. VAT). For more information contact Arxe Systems Ltd., P.O.Box 898, London E7 9RG, tel./fax 081-534 1198.

UPGRADE PRICES ON ACORN'S C AND ASSEMBLER

Acorn has now made available details of the upgrade paths available for users of its C and Assembler to the new Desktop versions reviewed in RISC User Volume 4 Issue 9. Note that you will need a minimum of 2 MBytes of memory for the new versions.

From	To	Upgrade Price
C release 3 (SKL80)	Desktop C	£99.87
C release 2 (SKL70)	Desktop C	£123.87
C release 1 (SKL28)	Desktop C	£123.87
Assembler (SKL64)	Desktop Assembler	£88.12
Software Developer's Toolbox (SKL58)	Desktop Assembler	£88.12

All upgrade prices shown above include VAT, and the upgrade offers are available until 1st January 1992. To obtain an upgrade send the original disc (disc 1 only for C release 3, the utilities disc for SKL58), with a cheque or postal order made payable to Acorn Direct, to DDE, Acorn Direct, Freepost, 13 Dennington Road, Wellingborough, Northants NN8 2RL.

SOFTWARE FROM SHERSTON

Sherston Software, best known for its educational software, has announced first details of three new products. *HiLighter* is a simple but powerful information handling package, aimed mainly at children, which allows them to create and link pages of graphics and text. Sherston claim that using the package is as simple as using a highlighter.

Recall is a new database, again designed for use by children, but powerful enough for a variety of applications. Both packages are expected to cost under £50. In addition, *Glimpse* can be used alongside DTP or design applications to show miniature versions of all Draw and sprite files within its own window, and will cost under £10. For more details contact Sherston Software Ltd., Swan Barton, Sherston, Malmesbury, Wilts SN16 0LH.

ANOTHER ARC RECORDER

Following last month's news from Oak Solutions, Hybrid Technology has also announced a low cost sound sampler for the Archimedes called *ArcRecorder*. This consists of a microphone which plugs into the printer port, and itself provides a compatible port for printers (and dongles). ArcRecorder also allows input direct from CD players and the like. Fully supported by software, Hybrid's ArcRecorder sells for just £37.89 inc. VAT. For more information contact Hybrid Technology Ltd., 88 Butt Lane, Milton, Cambridge CB4 6DG, tel. (0223) 861522, fax (0223) 862150.

NEWS FROM CLARES

Clares has announced major new versions of two existing products: Render Bender II is fully RISC OS compliant and is now supplied with a new front-end program called *Illuminator*, making it much easier to use. Render Bender II costs £135.00 inc. VAT (upgrade from Render Bender £74.95).

Clares' other release is a new version of Rhapsody (Rhapsody II) with many new features, and further 'Rhapsody' applications (*ScoreDraw* and *VoxBox* are promised for the future). Rhapsody II costs £61.95 inc. VAT (upgrade from Rhapsody £15.50). Clares Micro Supplies, 98 Middlewich Road, Northwich, Cheshire CW9 7DA, tel. (0606) 48511.

ARM3 PRICES DOWN

Aleph One has announced immediate availability of its 25 MHz ARM3 upgrade at the reduced price of £389.00 plus VAT. The latest version of the ARM3 upgrade will be shown at the BBC Acorn User show along with other new products. For further details contact Aleph One Ltd., The Old Courthouse, Bottisham, Cambridge CB5 9BA, tel. (0223) 811679. RU

Megabytes For All

Whether you already have a hard drive for your computer, or are thinking about getting one, this overview of hard drive options by David Spencer- including the latest SCSI and IDE devices - should be of interest.

WHY HAVE A HARD DISC?

To anybody who already owns a hard disc system the answer to this is obvious, but it is a fair question to ask. There are three main reasons for taking the plunge. Firstly, a hard disc drive will offer much greater storage capacity than a floppy disc - in some cases a single hard drive can hold the equivalent of 1000 floppies! Secondly, transferring data to and from a hard disc drive is typically 10 to 20 times faster than with a floppy, and that can make a lot of difference when loading and saving large files. Finally, with a hard disc drive you can guarantee that the files stored on it will be available all the time. This avoids all the disc-swapping needed to load fonts and system files from a floppy, and also allows features such as auto-boot files to be used properly.

WHAT OPTIONS ARE AVAILABLE?

Having convinced yourself that a hard drive is a must, the next question is what options are actually available to you. The answer will depend on whether you have an Archimedes or an A3000, and we shall look at the former first.

There are three main types of hard disc drive that can be connected to the Arc, each differing in the interface between the computer and the drive. The first of these uses an interface called the ST506 standard, and is the type of drive supplied as standard with the 420 and 440. In fact, all the 400 series Archimedes have the disc controller for an ST506 drive built onto the main circuit board. This means that adding a try is just that - you screw the drive down, connect the cables and away you go. To fit an ST506 drive to an A310 you need to add a podule containing the interface. There are however a few disadvantages with ST506. Firstly, very few systems now use this type of drive, and as a result the drive price is creeping up slowly, and secondly you will be very hard pushed to find a drive greater than about 50 Mbytes in size. A third problem is that although most ST506 interfaces technically support two hard drives, there is no provision to fit an external drive and you can only really fit one drive internally.

One minor advantage of ST506 drives is that they run under the same ADFS filing system used for floppy discs, whereas the other options described below require separate (and hence potentially incompatible) filing systems. This is covered in more detail later.

A much better option at the moment is to go for a SCSI interface and drive. The SCSI system allows for up to seven devices to be connected to it, so if you really wanted you could have one internal drive and six external ones. However, SCSI is not limited to just hard disc drives - the range of devices sporting a SCSI interface includes scanners, optical drives, tape streamers etc. Therefore SCSI is a particularly good choice if you think you might want to connect such devices at a later date.

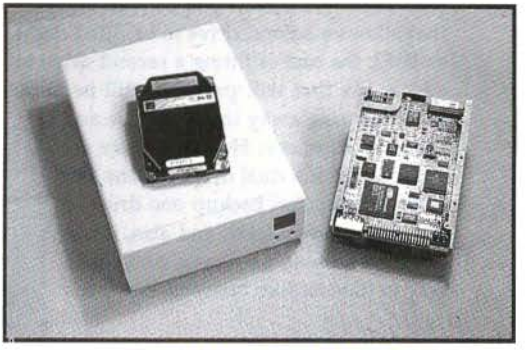
A point to note about SCSI is the range of interface cards available, and the difference between them. You should always check the small print to see if the card is termed 'eight-

bit' or 'sixteen-bit'. This refers to the number of parallel bits of data transferred between the computer and the card in one go. Sixteen bit cards will provide considerably improved performance (in terms of transfer speed) over the eight-bit variety. If you want the top, then go for Acorn's own SCSI card as used in the 540. This offers extremely fast data transfer, and currently represents the fastest interface option for the Archimedes. SCSI drives are available in sizes from 20 Mbytes to over 1 Gbyte, and can readily be obtained as a bare drive for internal fitting, or cased with a power supply for external use.

IDE is the latest drive standard to emerge, and it has come to the Arc after taking the PC world by storm over the last couple of years. IDE's one big advantage is cost - it's cheap. For drive capacities up to 100 Mbyte, nothing can beat it on price, and already drives up to 400 Mbytes are available. Again, IDE requires an interface podule to be fitted, and this will normally have a connector on the back for a second drive. In terms of speed, IDE falls between ST506 and 16-bit SCSI systems, but the increased use of techniques such as local caching of data on the drive will improve performance in the future.

For A3000 users the choice is rather more limited. The only ST506 system for the A3000 is produced by Morley Electronics, and consists of an interface card in an external podule case, and a 3.5" drive unit and power supply in a neat metal case. Really though, ST506 is not the best upgrade route to take for the A3000.

SCSI is a much better solution. Again, you will need an external drive with its own case and power supply, but as already said, these are readily available. You have a choice of an internal upgrade card, mounted within the A3000, or an external one on the rear podule connector. The problem with the internal card is that it can only support eight-bit transfer and hence the performance is relatively low.



A cased 3.5" external IDE drive

Perhaps the most elegant route currently for the A3000 is to opt for an IDE drive. This is because such drives are available in 2.5" sizes, which can (just) be fitted internally to the computer. These drives really have to be seen to be believed - they are simply minute. Unfortunately, 2.5" drives are rather pricey at the moment, although they will come down in price in a year or so when 1.8" drives start becoming available.

An interesting new option for the A3000 has just been launched by HCCS Associates. This is basically a SCSI interface and drive in an external metal podule box to plug onto the back of the A3000. No further details are available at the moment, but it would appear to use a 3.5" 1" high drive mounted on top of the interface card.

THE RIGHT SIZE

One trap that many users fall into is that of not considering the future. If you've never used a hard disc drive at all, then 20 Mbytes

may seem a mammoth amount of storage that you couldn't possibly ever fill up. Yet, give it a few weeks and you will be complaining that 20 Mbytes isn't half enough.

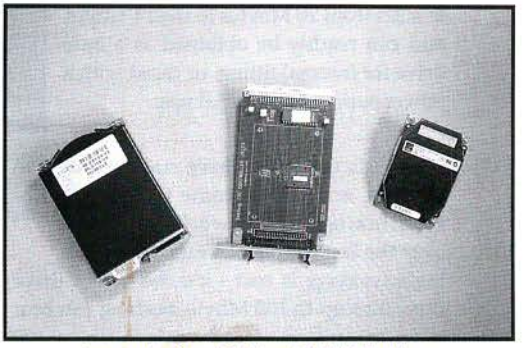
When choosing the right size of drive, remember that even if you pick an interface that allows a second drive to be fitted (SCSI or IDE), the cost of fitting a second drive to add to the first will probably still be more than throwing away the first drive and fitting a larger one. However, there are advantages of a dual drive system. For example, you can backup one drive to the other very quickly, and also, if one drive is external, use it as a convenient way to transfer files between machines.

RUNNING UNIX

Acorn have just released RISC IX, their version of the UNIX operating system for the Archimedes (see the previous issue of RISC User). UNIX is well known for gobbling up disc space, as the actual code takes as much as 50 Mbytes, and a further large chunk needed to implement virtual memory. This means that ST506 doesn't really provide a high enough maximum capacity for UNIX. Unfortunately, though, the only alternative interface that can be used is Acorn's SCSI card (not any other SCSI card). You should bear this in mind if you think that you might upgrade to UNIX at a later date.

USING A HARD DISC

Once up and running, a hard disc drive will appear on the icon bar next to the floppy drive, and can be used in almost the same way as a floppy. Clicking on the icon will bring up a directory display as per normal, and there is an icon bar menu to allow operations such as verifying the drive and checking free space. Operations that you can't perform from the Desktop on a hard drive are formatting and backup. To format a hard drive you need a special formatter which will have been supplied with the interface, or in the case of ST506 drives on the RISC OS Applications discs. Similarly, backing up a hard drive (onto a series of floppies) requires a special program, such as *Hard Disc Companion* from RISC Developments.



Internally fitted 2.5" and 3.5" IDE drives, plus interface

As mentioned earlier, ST506 drives run under the built in ADFS filing system, as do floppies, making these the most straightforward. SCSI and IDE drives on the other hand have to install their own filing system. The flexible structure of RISC OS ensures that by and large these different filing systems are fully compatible with ADFS. Any RISC OS compliant applications running under the Desktop will work with any filing system, however some older programs are written to only work with ADFS, and these will need modifying to work with other filing systems. Don't let this put you off though - Acorn have made it clear that developers must make their applications work with all filing systems in the future. A future article will look at the technicalities of this in more detail.

FUTURE DEVELOPMENTS

The overall use of hard disc drives is increasing, and the first effect of this has been to bring down drive prices - a trend which will continue at a steady rate. Of course, there are also continuous technical developments with larger and larger capacity drives appearing daily. For example, Hitachi hope to have a 3.7 Gbyte 5.25" SCSI drive available next year. Physical drive sizes are also decreasing rapidly. Capacities up to 89 Mbytes are already available in 2.5" units, with 120 Mbytes on the horizon, and within a few months 1.8" drives will be available. Not only are these newer drives pjysically smaller, but technical advances ensure they are faster, use less power and run quieter.

RECOMMENDATIONS

It is very hard to recommend one upgrade route over another, because everybody's requirements are different. However, our thinking would be something like this:

If you are likely to want to use very large hard drives (400 Mbytes plus), or devices like optical drives, then go for a sixteen-bit SCSI interface and drive.

If you are upgrading a 400/1 Archimedes, and you are sure that you won't want more than about 50 Mbytes of storage, go for an internal ST506 drive, but check the price against other options first.

Otherwise, if you are upgrading an A310, or an A3000, choose an IDE system.

If you already have a hard disc drive, but wish to expand, the options are basically the same. As already hinted at, you should do a few sums and deduce whether it is cheaper to actually start again, rather than expand on what you already have.

BACKUP SYSTEMS

With larger size hard discs, the problems of backing up the data stored on them becomes a major issue. Certainly, backing up to floppies is not practical for more than about 50 Mbytes. Fortunately, a number of tape backup devices are available for SCSI systems, right from simple video cassette systems with a capacity of 60 Mbytes per tape, up to DAT (Digital Audio Tape) drives, that can hold about 1.3 Gbytes on a single small tape.

Before long, IDE tape streamers will become available, and there are also a number of stand-alone systems that require a separate interface card. A future article will look at all these in detail.

WHAT PRICE?

We deliberately haven't mentioned any prices for drives so far, as there are so many companies producing them, and so many options. Instead, the table below lists typical prices (including VAT) taken from various adverts for the different options mentioned. All the prices are for complete systems including interface and drive.

ST506 40Mbyte	£405.38
Morley A3000 ST506 40Mbyte	£539.33
16-bit SCSI internal 80Mbyte	£581.63
16-bit SCSI external 80Mbyte	£640.38
IDE internal 89Mbyte	£457.08
IDE external 89Mbyte	£562.83
IDE A3000 internal 40Mbyte	£668.58
IDE A3000 external 40Mbyte	£433.58
HCCS 40Mbyte hard card	£410.08

The number of suppliers of hard drives is too numerous to list here, but you can easily ascertain the options by flicking through the pages of the Beebug Product Guide and the adverts in any Acorn magazine. RU

CalcSheet

The new spreadsheet for the Archimedes
Only £99.00 + VAT

Main features

* Very powerful, yet easy to install and use.
* Fully RISC-OS compatible, with intuitive keyboard short-cuts.
* Very compact code written entirely in C (see below).
* Sophisticated space saving techniques to optimise the use of memory and disc space.
* Spreadsheet default size 1000 columns by 9999 rows.
* Has over 80 built-in functions of all types.
* Built-in graphing facilities (bar, stacked bar, pie, line etc).
* Comprehensive manual.
* Timed autosave and macro facilities (including a learn option).

CalcSheet was designed specifically for multi-tasking on a 1M or single drive machine. CalcSheet will run on any Archimedes (or BBC A3000) with at least 150k free after loading the Shared C Library and Floating Point Emulator. CalcSheet does not use overlays or require the computer to be specially configured.

The comprehensive range of available functions should satisfy the needs of most potential users.

Available from Sept 1st 1991, for further details contact:

Trail Software, P.O. Box 283, London,
SW11 2LL. Tel 071-924-4880

Payment by cheque only (cheque to accompany order).

Number Base Converter

Get your numbers right with this handy utility by Robert Wilson.

When working with computers, particularly when you are programming, you often need to convert numbers between different bases. The utility presented here, *Convert*, is a multi-tasking application which converts instantly between decimal, hex and binary. It has a single window with writeable icons for each number base. On entering a number into any of these, the display in all three icons will be immediately updated to show the converted values.

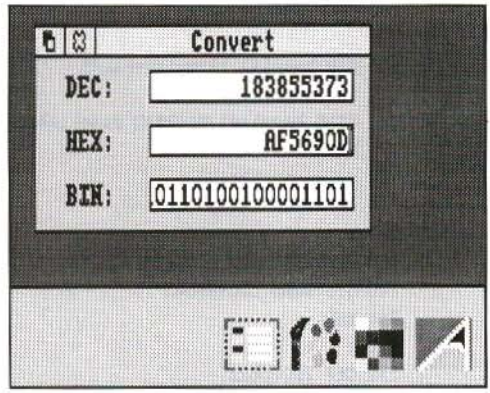
To create the application, first create an application directory called *!Convert*, which should contain three files. *!RunImage* is the Basic program given in listing 1. *!Sprites* should contain a mode 12 sprite, 34x17 pixels, called *!convert*, and *!Run* should be an Obey file, created using Edit, containing the following lines:

```
IconSprites <Obey$Dir>.!Sprites
Set Convert$Dir <Obey$Dir>
WimpSlot -min 32K -max 32K
Run <Convert$Dir>.!RunImage
```

USING THE APPLICATION

To use Convert, double-click on its icon in a directory viewer, whereupon it will be installed on the icon bar in the usual way. Clicking Select over the icon bar icon will open a window, as shown in figure 1. Initially all the writeable icons will be empty, but entering a value of the appropriate type into any of them will immediately cause the number you entered to be converted into the other two bases and the window updated to show the results. Note that only integers can be converted - you cannot enter fractional numbers.

The caret can be moved from icon to icon by pressing Return or the up and down cursor keys. Each time the caret is moved to a new icon, the values are re-calculated and the window updated. To clear all the data in the writeable icons, press the Home key.



The number base converter in operation

The icons in the window are only 16 characters long, though the binary display is scrollable to a maximum of 32 characters to allow full 32-bit numbers to be converted. Decimal numbers are treated as signed, i.e. values with the top bit set (&80000000 and above) will be displayed as negative numbers. You can also enter negative values into the decimal slot, and these will be converted into the appropriate hex and binary values. Note, however, that if you try to enter a positive value greater than 2147483647 (i.e. 2^31-1), or a negative value less than -2147483648, a "Decimal number too big" error will be generated.

```
10 REM                >!RunImage
20 REM Program        Number converter
30 REM Version        A 1.15
```

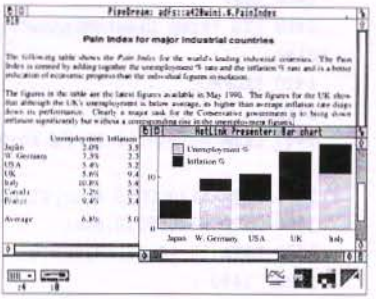
```
   40 REM Author    Robert G. Wilson
   50 REM RISC User October 1991
   60 REM Program   Subject to Copyright
   70 REM           Not Public Domain
   80 :
   90 DIM bk% 400:app$="Convert"
  100 SYS "Wimp_Initialise",200,&4B53415
4,app$
  110 :
  120 PROCcreate_win
  130 PROCsetup_menu
  140 PROCicon_on_bar
  150 :
  160 DIM base%(2,1):quit%=FALSE
  170 FOR a%=0 TO 2
  180 READ base%(a%,0):READ base%(a%,1)
  190 NEXT
  200 os_convert%=&D0
  210 ON ERROR PROCerror
  220 :
  230 REPEAT:PROCpoll:UNTIL quit%
  240 SYS"Wimp_CloseDown"
  250 END
  260 :
  270 DEF PROCpoll
  280 SYS "Wimp_Poll",&31,bk% TO reason%
  290 CASE reason% OF
  300 WHEN 2:SYS "Wimp_OpenWindow",,bk%
  310 WHEN 3:SYS "Wimp_CloseWindow",,bk%
  320 WHEN 6:PROCclick
  330 WHEN 8:PROCkey_press(bk%!24)
  340 WHEN 9:IF !bk%=0 quit%=TRUE
  350 WHEN 17,18:IF bk%!16=0 quit%=TRUE
  360 ENDCASE
  370 ENDPROC
  380 :
  390 DEF PROCclick
  400 IF bk%!12=-2 THEN
  410 IF bk%!8=2 THEN
  420 SYS "Wimp_CreateMenu",,mbk%,!bk%-6
4,140
  430 ELSE
  440 !bk%=handle%
  450 SYS "Wimp_GetWindowState",,bk%
  460 SYS "Wimp_OpenWindow",,bk%
  470 SYS "Wimp_SetCaretPosition",handle
%,0,0,0,-1,0
  480 ENDIF
  490 ENDIF
  500 ENDPROC
  510 :
  520 DEF PROCkey_press(key%)
  530 ic%=bk%!4
  540 i$=$(FNread_icon(ic%))
  550 CASE key% OF
  560 WHEN 13,&18E,&18F:IF i$>"" PROCcal
c(ic%)
  570 IF key%<>13 PROCmove_caret(1+2*(ke
y%=&18F))
  580 WHEN 30:PROCreset(ic%)
  590 OTHERWISE:SYS "Wimp_ProcessKey",ke
y%
  600 ENDCASE
  610 ENDPROC
  620 :
  630 DEF PROCmove_caret(x%)
  640 ic%+=x%
  650 IF ic%=3 ic%=0 ELSE IF ic%=-1 ic%=
2
  660 i$=$(FNread_icon(ic%))
  670 SYS "Wimp_SetCaretPosition",handle
%,ic%,0,0,-1,LENi$
  680 ENDPROC
  690 :
  700 DEF PROCreset(cpos%)
  710 FOR a%=0 TO 2
  720 PROCwrite_icon(a%,""):NEXT
  730 SYS "Wimp_SetCaretPosition",handle
%,cpos%,0,0,-1,0
  740 ENDPROC
  750 :
  760 DEF PROCcalc(from%)
  770 neg%=0:IF from%=0 THEN
  780 IF ASCi$=45 neg%=1:i$=MID$(i$,2)
  790 t%=0
  800 ELSE
  810 t%=&80000000
  820 ENDIF
  830 SYS "XOS_ReadUnsigned",base%(from%
,0)+&20000000,i$,t%+&7FFFFFFF+neg% TO ,,
val%;flags%
  840 IF flags% AND 1 ERROR 1,"Decimal n
umber too big"
  850 IF neg%=1 AND from%=0 val%=-val%
```

```
  860 FOR a%=0 TO 2
  870 SYS os_convert%+base%(a%,1),val%,b
k%+256,256 TO ,end%
  880 ?end%=13:a$=$(bk%+256)
  890 i%=0:REPEAT i%+=1
  900 UNTIL MID$(a$,i%,1)<>"0"
  910 a$=RIGHT$(a$,LENa$-i%+1)
  920 PROCwrite_icon(a%,a$)
  930 NEXT
  940 ENDPROC
  950 :
  960 DEF FNread_icon(icon%)
  970 !bk%=handle%:bk%!4=icon%.
  980 SYS "Wimp_GetIconState",,bk%
  990 =bk%!28
 1000 :
 1010 DEF PROCwrite_icon(icon%,s$)
 1020 s%=FNread_icon(icon%):$s%=s$
 1030 bk%!4=icon%
 1040 bk%!8=0:bk%!12=0
 1050 SYS "Wimp_SetIconState",,bk%
 1060 ENDPROC
 1070 :
 1080 DEF PROCcreate_win
 1090 !bk%=682:bk%!4=256
 1100 bk%!8=1122:bk%!12=484
 1110 bk%!16=0:bk%!20=0
 1120 bk%!24=-1:bk%!28=&87170012
 1130 bk%!32=&1070207:bk%!36=&C0103
 1140 bk%!40=0:bk%!44=-292
 1150 bk%!48=440:bk%!52=0
 1160 bk%!56=&3D:bk%!60=&3000
 1170 bk%!64=1:bk%!68=0
 1180 $(bk%+72)=app$:bk%!84=6
 1190 minx=150:miny=-58
 1200 maxx=418:maxy=-16
 1210 FOR a%=0 TO 2
 1220 ibk%=bk%+88+32*a%
 1230 !ibk%=minx:ibk%!4=miny
 1240 ibk%!8=maxx:ibk%!12=maxy
 1250 ibk%!16=&700F335:DIM valid% 12
 1260 READ $valid%,ibk%!28
 1270 ibk%!24=valid%
 1280 DIM indir% ibk%!28:$indir%=""
 1290 ibk%!20=indir%
 1300 miny-=72:maxy-=72
 1310 NEXT
 1320 minx=24:miny=-58
 1330 maxx=122:maxy=-16
 1340 FOR a%=3 TO 5
 1350 ibk%=bk%+88+32*a%
 1360 !ibk%=minx:ibk%!4=miny
 1370 ibk%!8=maxx:ibk%!12=maxy
 1380 READ ibk%!16,$(ibk%+20)
 1390 miny-=72:maxy-=72
 1400 NEXT
 1410 SYS "Wimp_CreateWindow",,bk% TO ha
ndle%
 1420 ENDPROC
 1430 :
 1440 DATA A0-9\-,12,AA-Fa-f0-9,9,A0-1,3
3
 1450 DATA &17000039,Dec:,&17000039,Hex:
 1460 DATA &17000039,Bin:
 1470 DATA 10,&C,16,&4,2,&10
 1480  1490 :
 1500 DEF PROCsetup_menu
 1510 DIM mbk% 80:$mbk%=app$
 1520 mbk%!12=&70207:mbk%!16=100
 1530 mbk%!20=44:mbk%!24=0
 1540 mbk%!28=&80:mbk%!32=-1
 1550 mbk%!36=&7009021:$(mbk%+40)="Quit"
 1560 ENDPROC
 1570 :
 1580 DEF PROCicon_on_bar
 1590 sprf%=OPENIN"<Convert$Dir>.!Sprite
s":extent%=EXT#sprf%+16:CLOSE#sprf%
 1600 DIM sprites% extent%
 1610 !sprites%=extent%:sprites%!8=1
 1620 SYS "OS_SpriteOp",&10A,sprites%,"<
Convert$Dir>.!Sprites"
 1630 !bk%=-1:bk%!20=&3002:bk%!4=0
 1640 bk%!8=0:bk%!12=70:bk%!16=70
 1650 $(bk%+24)="!"+app$
 1660 SYS  "Wimp_CreateIcon",,bk% TO ico
nbar%
 1670 ENDPROC
 1680 :
 1690 DEFPROCerror
 1700 !bk%=ERR:$(bk%+4)=REPORT$+CHR$0
 1710 SYS "Wimp_ReportError",bk%,1,app$
 1720 ENDPROC
```

RU

PIPEDREAM

WINNER
of the 1989/90 BBC Acorn User Award for Best 32-bit Business Software



The bar chart in the screen shown above was produced by using the HotLink between PipeDream 3 and HotLink Presenter.

Major features include:

intuitive RISC OS user interface ●
many documents loaded at once ●
display and printing of pictures within text ●
wysiwyg display including all RISC OS fonts ●
built-in 93,003 word spelling checker ●
file compatibility with PC & Z88 PipeDream & BBC View Professional ●
natural, background recalculation ●
keystroke compatibility with Z88 & PC PipeDream ●
Z88 filing system ●
automatic loading of VIEW, ViewSheet, Lotus, First Word Plus, Tab and CSV files ●
automatic saving of VIEW, Lotus, Tab, CSV and Acorn DTP format files ●
multi-field sorting ●
62 spreadsheet and database functions ●
external references between documents for 3-D modelling ●
macro file recorder ●
slot protection ●

COLTON software

PipeDream 3 breaks down the barriers between word processor, spreadsheet and database. With PipeDream 3, you can include numerical tables in your letters and reports, add paragraphs to your spreadsheets, and perform calculations within your databases.

PipeDream 3 has been written to take full advantage of RISC OS – if you can use RISC OS, you can use PipeDream 3. It is fully multi-tasking and multi-windowing, so you can work on many documents at once and instantly move information between them. PipeDream 3 can automatically load and save most popular file formats and is the first program to use the new RISC OS HotLink, which enables it to interact dynamically with Archimedes graphics programs, such as *HotLink Presenter* from Lingenuity and *GraphBox* from Minerva.

As well as winning the 1989/90 BBC Acorn User Award for Best 32-bit Business Software, PipeDream 3 was runner-up in the Best 32-bit Educational Software and Best 32-bit DTP/Word Processor categories.

PipeDream 3
Breaking down the barriers

POWER ● SPEED ● FLEXIBILITY ● EASE OF USE

PipeDream 3 is for all Archimedes computers with 1Mbyte or more of RAM, including the A3000.

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PipeDream 3 costs £147.00 + VAT.

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All trademarks acknowledged.

Acorn's Multi-tasking PC Emulator

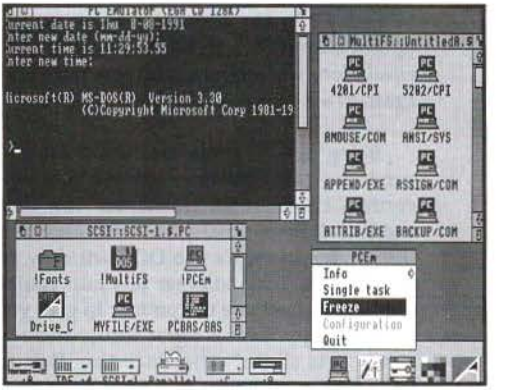
Reviewed by Lee Calcraft

In their struggle for market share, Acorn have always viewed their PC Emulator for the Archimedes as an important product. This software emulation of the best selling microcomputer architecture in the world allows Archimedes users to run a wide range of PC software on their machines. Up to now, activating the Emulator meant saying goodbye to RISC OS for the duration of the PC session, but with the release of version 1.6, you can multi-task the Emulator from the Desktop. Moreover, as well as MS-DOS 3.3, CD ROM extensions (not available at the time of this review), and mouse driver software which turns your mouse into a PC mouse, the package now includes Arxe's useful MultiFS application, which allows you to open filing system windows on all your PC drives. We will take a look at this first.

Using MultiFS

Double-clicking on the MultiFS icon installs a drive icon on the icon bar for every configured PC drive. In the simplest case, this will just be floppy drive A. But if you have further floppy drives configured, or have partitioned your hard drive for MS-DOS use, then these too will appear on the icon bar. In the case of the hard drive, you may first need to edit the !Run file of the MultiFS application to tell it where to find the drive.

Once the drive icons are installed, they behave in a similar way to RISC OS drive icons. You can open windows on directories, and perform all the usual filing operations. Most important of all, you can drag files between MS-DOS and RISC OS. The options from the floppy drive icon bar menu include *Format*, which is a lot more convenient than issuing Format commands at the DOS prompt. My only grouse with MultiFS is that it will not let you access the hard drive(s) while the Emulator is installed. You get the message "Drive in use", even though you may only want to perform a read operation. The only way around this seems to be to remove the Emulator from the icon bar altogether.



PCem running in a window alongside MultiFS

THE EMULATOR

The Emulator itself is supplied in two versions, one for 1 Mbyte systems (called PCEmS), and one for systems with 2 Mbytes or more (called PCEm). The former offers a reduced performance; and although running this does not cause RISC OS data to be lost, the Emulator takes over the whole screen. There are also restrictions on graphics modes. PCEmS will only operate in MDA mode, while PCEm allows MDA, CGA, EGA or EGA+ (monitor permitting). This latter mode approaches VGA performance, and allows Microsoft Windows 3 to be used with PCEm.

Both versions of the Emulator are installed by double-clicking on the

appropriate icon, which is then installed on the icon bar. The icon bar menus have a useful Configuration option. This allows you to set up monitor types (PCEm version only), floppy and hard disc drives, startup command, and so on.

What happens when you click on the icon bar icon depends on which version of the Emulator you are using. Both versions look for a DOS system disc and attempt to boot up; but while PCEmS takes over the whole screen, its big brother performs in a standard RISC OS window, which may be moved around the Desktop, and scrolled or resized in the normal way. A menu option allows you to flip to a full-screen emulation, while clicking Menu flips back again to a RISC OS window.

Being able to multi-task the 2 Mbyte version of the Emulator from the Desktop confers enormous advantages. You can execute all the normal DOS commands from the keyboard while the DOS window has input focus. Then to enter text into another application, just use the pointer to give your RISC OS application input focus, and type away. It is slightly disconcerting that the DOS cursor continues to flash when you do this, but you can always scroll it out of view if you prefer, or select the *Freeze* option from the icon bar menu. This just halts the Emulator until you unfreeze it.

HOW CLOSE IS THE EMULATION ?

There is a wide range of PC applications which can be run on version 1.6 of the Emulator without any special conditions (see table 1), while other software may be restricted in some way, and some will not run at all. To Acorn's credit, they have taken the emulation of most major parts of PC architecture down to chip level. This includes full hardware emulation of the Intel 80188 CPU, 8087 maths coprocessor, 8259 interrupt controller, 8253 timer, 8237 DMA controller, 8250 serial interface, and 8255 I/O chip. Relatively few elements (floppy and hard discs, and real time clock for example) have been emulated at BIOS level only. In such cases, the hardware itself has not been emulated: only its BIOS interface. This means that applications which write directly to the chips concerned may not operate correctly.

Database/spreadsheet:	Publishing:
DBase IV	Timeworks
Retrieve	Ventura 2.0
Neris	DeskPress 1.01
Excel	
Lotus 1-2-3 V2.1	**Word processing:**
SuperCalc 4	Brief MS Word V5
Symphony	Wordstar Prof V6
MS Works	WordPerfect
	Planning:
Programming:	PC Planner
MASM MS C V5	BYL
Quick C	
GWBasic	**Communications:**
SmallTalk/V	Crosstalk
ProFORTRAN77	Procomm

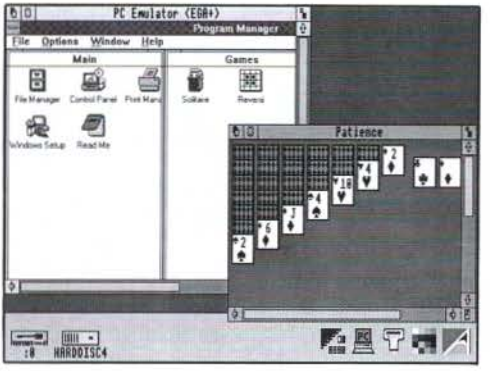
Table 1. Applications which run under the Emulator with no restrictions

SPEED

Speed is of course a vital factor in evaluating an emulator of this kind. In most areas, the speed of this new version is comparable to that of its predecessor, but with a downgrading of a few percent when in multi-tasking mode. In the case of floating point instructions however, there is a dramatic improvement of up to fourteen times, because Acorn have written their own emulation of the 8087 maths coprocessor chip, rather than relying on Microsoft's 8088 series emulation of it running via Acorn's ARM-based 80188 emulation.

Broadly speaking, if the Emulator is running on an ARM2 machine, it will run at about the speed of a bog standard XT, running at 4.77MHz with an 8088 processor. If you have an ARM3 fitted, the speed performance will approach that of an IBM PC AT running at 8MHz with an 80286 processor - more precisely it will be slower by about one third.

Perhaps one of the greatest achievements of the new Emulator is that it will actually



The ultimate achievement - running Windows 3 from the Desktop

run Microsoft Windows, providing that you have a suitable multi-sync monitor (see illustration 2). But unless you have an ARM3 fitted, it will be very sluggish indeed. Nevertheless, it is some achievement to successfully run such a multi-layered system: Acorn's Desktop running Microsoft Windows running DOS applications.

But whether you want to run Windows or not, version 1.6 of the PC Emulator is a highly desirable adjunct to the Archimedes - especially in view of the ubiquitous nature of MS-DOS. To be able to run DOS applications on the Desktop without blowing away all of RISC OS is a sheer delight, and provides another good reason for upgrading your machine to 2 Mbytes.

The PC Emulator 1.6 costs £99 from Acorn dealers. Existing users who have MS-DOS (as opposed to DR-DOS), may upgrade for £29 plus VAT - but note that the upgrade does not include DOS 3.3. Send a cheque for £34.08 made payable to 'Acorn Direct' together with your old disc, to:

Vector Services (Acorn Direct),
13 Dennington Road,
Wellingborough,
Northants NN8 2RL.

This offer closes on 31 October 1991.

Watch this space for details of an Emulator upgrade for DR-DOS users, to be announced shortly by Acorn.

RU

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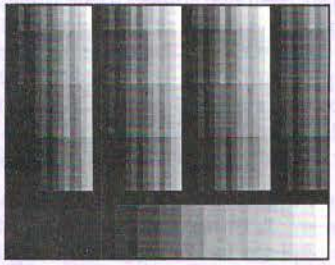
Time Series, eg moving averages, exponential smoothing, causal models.
One - Two - and Three-way ANOVA subsystems. Distributions generator. Histograms. Linear Calibration.
Cluster analysis. Many other powerful analytical and descriptive features. Full utilities.

Price still £150 (Archimedes version). Large EDUCATIONAL DISCOUNTS. RU subscriber discount. No VAT.
There's far too much to describe here. Get full information now from:

Serious Statistical Software, Lynwood, Benty Heath Lane, Willaston, South Wirral L64 1SD. Tel. 051 327 4268.

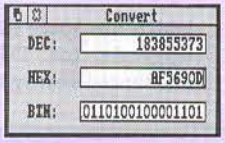
RISC User Disc Contents

Putting Your Monitor to the Test



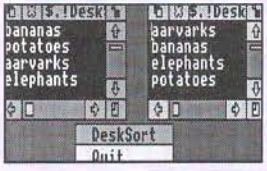
Evaluate the performance of any monitor connected to the Archimedes with this program. It offers six different test screens, which will enable you to asses a monitor you intend to purchase, or indeed your own monitor to decide whether any adjustments are needed.

Number Base Converter



This multi-tasking application is particularly useful to programmers when there is a need to convert numbers between different bases. It will convert instantly between decimal, hex and binary numbers, all displayed in a single window with writable icons.

A Desktop File Sorter



The complete application will sort text and data files dragged to its icon bar icon.

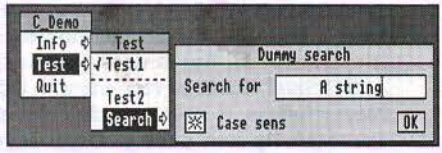
Time on the Arc

Two short programs for use with the real time clock: the first allows you to extract parts of the time or date, and the second to increase or decrease the hour by one, to implement BST changes.

WP/DTP: Simple Text Printer Utility

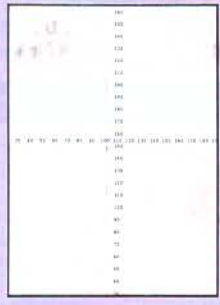
A short printer utility, designed to run as a multi-tasking application, which allows you to print simple text files quickly and easily as proportional text. It is particularly useful if your memory space is limited, as it only occupies 16K (as opposed to 177K for PrinterDM). This version is for the Epson LQ-550 but can be modified for others.

Using ANSI C: Menus and Dialogue Boxes



The C_Demo program incorporating the new Dialogue box.

The 80 Column



A useful program which allows you to set up the printer margins correctly with the RISC OS printer drivers. It sends a test page to the printer from which you can determine the margin settings which you need for your particular printer.

ADDITIONAL ITEMS REFERRED TO IN THE MAGAZINE

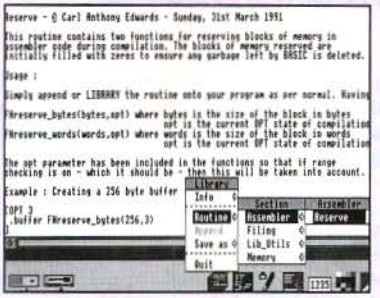
ArcScan Data

The ArcScan files for this issue of RISC User and BEEBUG Vol.10 No.4.

All of these powerful applications and

ctober 1991

Procedure Library Manager


Reserve - © Carl Anthony Edwards - Sunday, 31st March 1991
This routine contains two functions for reserving blocks of memory in assembler code during compilation. The blocks of memory reserved are initially filled with zeros to ensure any garbage left by BASIC is deleted.
Usage :
Simply append or LIBRARY the routine onto your program as per normal. Having
FNreserve_bytes(bytes,opt) where bytes is the size of the block in bytes opt is the current OPT state of compilation
FNreserve_words(words,opt) where words is the size of the block in words opt is the current OPT state of compilation
The opt parameter has been included in the functions so that if range checking is on - which it should be - then this will be taken into account.
Example : Creating a 256 byte buffer
OPT 3
.buffer FNreserve_bytes(256,3)
]
Library
Info
Routine
Append
Save as
Quit
Section
Assembler
Filing
Lib_Utils
Memory
Assemble
Reserve

An extremely useful application, which provides a library to store and manage frequently used procedures and functions. You can extract any routine from the library, you may append a routine or a set of routines to a file when needed, or you may save the documentation for any routine and display this separately if required.

Archimedes Clip Art

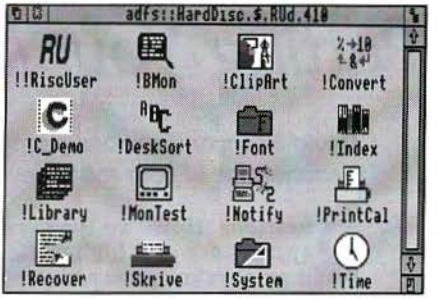
The disc contains four samples from the different collections of Clip Art reviewed in this issue - two Draw files (bicycle and scientific instrument), and two sprite files (leopard and motocross).

BONUS ITEMS

Notify

An application which allows Econet users to store Notify messages for later recall, instead of having them instantly displayed on screen in error boxes.

This month's disc menu



Basic Monitor

This application will display any Basic program either as a simple hex dump, or with line numbers, keywords, etc. decoded and interpreted for ease of reference. Other options, including hardcopy, are also provided.

Revue Font

This elegant font, suitable for bold titles and posters, is a sample of the excellent value available from the RISC User Public Domain Library.

Revue Font
PUBLIC DOMAIN

Note: This font can only be used

Running Font opens a directory be copied to within your fonts d other font. Please note that this reduced when viewing at small

Recover Update

A new improved version of the Disc Recover program first published in Volume 4 Issue 1, offering multi-tasking file recovery and additional support for multiple files and directories.

election of bonus items for only £4.75

Putting Your Monitor to the Test

David Spencer describes a program that can be used to evaluate the performance of your monitor.

Question: How do you ruin the appearance of a high-performance colour graphics computer and give yourself some serious eye strain in one easy go? Answer: Use a poor quality monitor.

The program given here is designed to allow you to evaluate the performance of any monitor connected to the Archimedes. It can be used either to check out a monitor you are considering purchasing, or to test your current and decide whether any adjustments are needed.

Start off by typing in and saving the listing. When run, the program will present you with six different test screens in turn, with the space bar moving on to the next screen. Each screen performs a different test function, as described below, and some of the screens have additional keyboard controls and these are also described. When forming an opinion of a monitor's setup, you should bear in mind what user adjustments are possible, either through front or rear panel controls, or through presets that can be adjusted without dismantling the monitor.

If your computer is configured for a standard monitor, the tests are performed in a 640 by 256 pixel mode, while if the computer is configured for a VGA monitor, 640 by 480 is used. If a multi-sync monitor type is in use then the tests are performed three times, with resolutions of 640 by 256, 640 by 480 and 640 by 512.

THE TEST SCREENS

Test 1 consists of either a blank border and a coloured background, or a blank background and a coloured border, with Return switching between the two. This test can be used to check for picture alignment on the screen, distortion of the display (such as pin cushioning where the edges are all pulled in, or barrel distortion where the reverse occurs) and colour purity. This should be checked by making sure the colour appears uniform over the screen area, and to aid with this the cursor up and down keys can be used to change the colour used.

Test 2 is a crosshatch pattern of white lines on a black background. You should use this to test the monitor's convergence by checking that the lines do appear white, and not separated red, green and blue.

Test 3 consists of a circle in the centre of the screen and groups of horizontal and vertical lines getting closer and closer. The circle is designed to test linearity, and should appear circular. The close lines measure the display bandwidth of the monitor - as they get closer together, there will be a point at which they merge. The greater the number of distinct lines the better.

Test 4 displays all 256 colours together and a fade from black to white. All the colours and grays should appear distinct, and the fade should look uniform.

Test 5 fills the screen with random system font characters. The left and right cursor keys can be used to change the foreground colour, and the up and down keys to change the background. The characters should remain distinguishable over the entire screen for all reasonable colour combinations.

Finally, test 6 displays an antialiased font (Trinity.Medium.) at various sizes. All the characters should appear legible, without blurring at the edges. If you do not have the Trinity font, then you can change the name in the program.

WHAT TO EXPECT?

As they say, you only get what you pay for, and you can't expect a £200 monitor to be perfect. Obviously, a £500 unit should be better, but again there is a limit. The key

factor is whether you will be happy using the monitor - not just for five minutes, but for five hours when already tired.

Important: This program is only intended for evaluating monitors. It is not designed as a setup program to use when making internal adjustments to the monitor. Internal adjustments to monitors can be very dangerous unless you are qualified to service them. In any case, it is often not possible to perform adjustments correctly without reference to the correct service information and test equipment.

```
  10 REM           >!RunImage
  20 REM Program   Monitor test suite
  30 REM Version   1.00
  40 REM Author    David Spencer
  50 REM RISC User October 1991
  60 REM Program   Subject to Copyright
  70 :
  80 m%=MODE:ON ERROR OSCLI"FX4":MODE m
%:END
  90 MODE12
 100 DIM Red(7),Green(7),Blue(7)
 110 PROCreadcolours
 120 MODE 12:IF MODE=12 PROCtest
 130 MODE 27:IF MODE=27 PROCtest
 140 MODE 20:IF MODE=20 PROCtest
 150 END
 160 :
 170 DEF PROCtest
 180 *FX4 1
 190 SYS &35,-1,11 TO ,,xsize
 200 SYS &35,-1,4 TO ,,xeig
 210 SYS &35,-1,12 TO ,,ysize
 220 SYS &35,-1,5 TO ,,yeig
 230 xsize=((xsize+1)<<xeig)-1
 240 ysize=((ysize+1)<<yeig)-1
 250 PROCtest1:PROCtest2:PROCtest3
 260 PROCtest4:PROCtest5:PROCtest6
 270 OSCLI"FX4":ENDPROC
 280 :
 290 DEF PROCtest1
 300 CLG:B%=7:S%=0
 310 REPEAT PROCsetc(B%+B%*S%,0)
 320 BO%=-S%*B%
 330 VDU19,0,24,Red(BO%),Green(BO%),Blu
e(BO%)
 340 A=GET:IF A=13 S%=NOTS%
 350 IF A=138 B%=B%-1-8*(B%=0)
 360 IF A=139 B%=B%+1+8*(B%=7)
 370 UNTIL A=32
 380 ENDPROC
 390 :
 400 DEF PROCtest2
 410 CLG:PROCsetc(0,7)
 420 FORX%=80 TO xsize STEP 80
 430 LINE X%,0,X%,ysize
 440 NEXT
 450 FORY%=80 TO ysize STEP 80
 460 LINE 0,Y%,xsize,Y%
 470 NEXT
 480 REPEAT UNTIL GET=32
 490 ENDPROC
 500 :
 510 DEF PROCtest3
 520 CLG:PROCsetc(0,7)
 530 xs=((xsize-150)/5)-30
 540 xstep=1<<xeig
 550 FORF%=5 TO 1 STEP-1
 560 S%=7:C%=0:FORG%=1TOxs
 570 GCOL S%
 580 MOVE 150+((xs+30)*(5-F%))+G%,0
 590 DRAW BY 0,120
 600 C%+=1:IF C%=F%*xstep C%=0:S%=7+7*(
S%=7)
 610 NEXT:NEXT
 620 ys=(ysize/5)-30
 630 ystep=1<<yeig
 640 FORF%=5 TO 1 STEP-1
 650 S%=7:C%=0:FORG%=1TOys
 660 GCOL S%
 670 MOVE 0,((ys+30)*(5-F%))+G%
 680 DRAW BY 120,0
 690 C%+=1:IF C%=F%*ystep C%=0:S%=7-S%
 700 NEXT:NEXT
 710 GCOL 7
 720 CIRCLE xsize/2,ysize/2,(ysize-300)
/2
 730 REPEAT UNTILGET=32
 740 ENDPROC
 750 :
 760 DEF PROCtest4
 770 IF MODE=12 MODE15 ELSE MODE MODE+1
 780 xs=(xsize+1)/64:ys=(ysize-255)/4
 790 FORT%=0TO3
 800 FORC%=0TO63:GCOL C% TINT T%<<6
 810 RECTANGLE FILL xs*C%,ys*T%+256,xs,
ys
 820 NEXT:NEXT
 830 FOR G%=0TO15
 840 X%=(G%>>2):X%=X%+(X%<<2)+(X%<<4)
```

continued on page 50

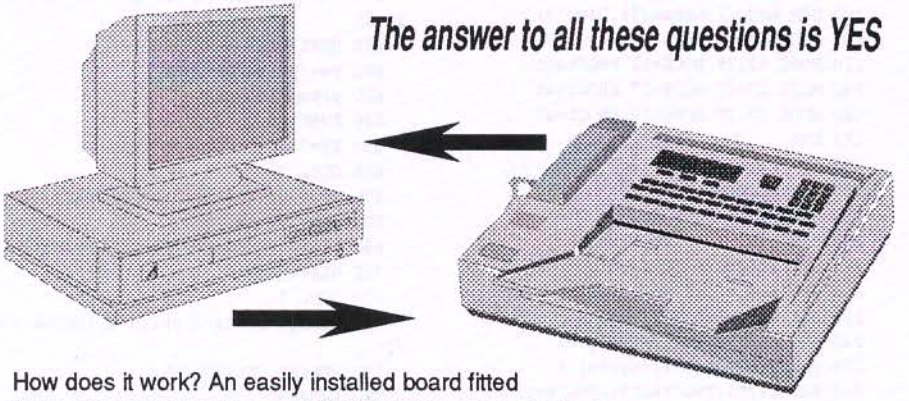
spacetech
space science resources

21 West Wools, Portland, Dorset DT5 2EA. U.K. Tel. 0305 822753 Fax. 0305 860483

The spacetech FAXSCAN

Is it a 200 dpi, A4, automatic sheet fed scanner?
Is multi tasking scanning software for the Archimedes/A3000 included?
Is it a standalone FAX machine?
Is it a photocopier?
Is it a telephone?
Can I send faxes directly from the ARC desktop? (Text, sprites, draw, DTP etc.)
Can it be used as a printer?
Does it have an optional answering machine?
Can it be used as a telephone/FAX/copier when the ARC is switched off?

The answer to all these questions is YES



How does it work? An easily installed board fitted to the A3000 or Archimedes 300/400/500 series interfaces to the popular Amstrad FX9600 or FX9600AT facsimile machine. Valuable podule space is not used, but it should be noted that the product is not compatible with Econet.

ALL THIS FOR THE PRICE OF A SCANNER ON ITS OWN!

Only £99.50 Ex.VAT for the interface &software

OR.. ***HALF PRICE*** If you get the FAX machine from us!

Please write or telephone for more details of this exciting new product.

Computer Concepts' Laser Direct Hi Res Printer

Reviewed by David Pilling

Direct drive laser printers have been mentioned more than once in the pages of RISC User. Volume 3 Issue 8 carried a review of Computer Concepts' Laser Direct, which was followed by a review of the Calligraph ArcLaser in Volume 4 Issue 1.

Now Computer Concepts has released another direct laser which promises to be the best yet, the Laser Direct Hi Res. In fact it comes in two versions, one using the Canon LBP-4 engine (4 pages per minute) and the other the Canon LBP-8 (8 ppm). Both versions use the same expansion card however. What makes these printers particularly exciting is that in addition to the usual 300x300 dpi resolution, the use of a variable dot size produces a resolution approaching that of 600x600 dpi printers. To get this in the PC or Mac world requires expensive hardware.

These are true laser engines, unlike the other Arc direct drive laser printers which use a liquid crystal shutter. They are the same as used in the very popular HP LaserJet series 2 and 3 (LBP-8) and 3P (LBP-4). You can therefore expect high quality, and cheap consumables and spare parts.

THE PACKAGE

Computer Concepts' LBP-4 package is in fact just an expansion card, and you must buy your own Canon LBP-4 printer. This offers savings because there is fierce competition in the PC market to sell them. Another advantage is that the LBP-4 can be used just like a normal laser printer, so you could use it with a PC when not connected to your Arc.

The LBP-8 is a larger heavy duty printer, one feature of which is a straight paper path suitable for thick paper or cardboard. My experiences are based on the LBP-8 version, and in this case the complete package including printer was supplied by CC.

The LBP-8 version of the Laser Direct HI-Res

SETTING UP

Within a week of sending off my order, I received two large boxes. One contained the printer, the other the expansion card, manual and toner cartridge. The card looks well made and professional. To set up the system, you must first fit this into the backplane of your Arc.

Next, the toner cartridge has to be installed. This is a bit intimidating, requiring lots of probing around inside the printer. However it is simpler than the documentation implies, and no doubt becomes easier with practice. The final part of installation is connecting the card to the printer. A metre or so of ribbon cable is provided to do this. Altogether, the hardware is neat and tidy, and easy to set up.

One surprise is that the printer supplied is not actually a Canon LBP-8 at all. It is

made by Canon, but is a generic OEM version with a video interface instead of the normal controller board. The manual supplied with the printer is similarly general, designed for manufacturers to supply after applying their own badge to the printer. So people looking for the cachet of a Canon label on the printer will be disappointed!

	R260		A440	
	300	600	300	600
Standard Draw file	20 (5)	30 (14)	30 (13)	73 (55)
4-page text file	45 (12)	75 (60)	57 (43)	236 (215)

Figure 1. Comparative timings in seconds

To use the system, you must install CC's *PrinterHR* printer driver, which works exactly like any other RISC OS printer driver. The driver offers 600x300 dpi as well as the other two resolutions previously mentioned. A 600x600 dpi page uses a lot of memory, and 4 Mbytes of RAM in your Arc is probably a necessity for this resolution. The driver has built-in data compression which helps. There is also an option to use CC's own high speed font manager instead of Acorn's. For applications such as 1st Word Plus, which do not use the RISC OS drivers, an Epson LQ emulator is provided.

Of the three resolutions, 300x300 dpi is fastest, and the difference in print quality between this and the higher resolutions is fairly small for text (though more noticeable on italicised text). For half-toning, on the other hand, there is a definite improvement in the finished result at the higher resolutions. But since 600 dpi costs only time and memory, if you have plenty of both you may still find it worthwhile to do all your printing at that resolution.

PERFORMANCE

Figure 1 shows some comparison timings between 300x300 and 600x600 dpi, on both a 440 and an R260 Unix workstation (which has an ARM3 processor). The fast font manager was used. The times in brackets are how long it took for multi-tasking to resume. What these numbers show particularly is that the speed of printing is constrained by processor power, especially at 600 dpi, and that at this resolution an ARM3 pays major dividends. With the LBP-4 model, the printing speed will be slower.

As far as practical use is concerned, DTP in particular becomes a far more interesting activity with a fast printer. Ovation came to life. The greater speed also means that you can use a DTP program for all word processing.

There is a price to be paid for the speed and quality of laser printing. This is not only the initial high price of the hardware, but also the cost of consumables. The Canon engines are interesting in that the toner and drum are built into a single cartridge. When you replace the toner, you also replace components in the printing mechanism. This implies good print quality, but also a high cost toner cartridge. Currently branded cartridges cost around £60+VAT.

The figure quoted for cartridges is about 3000 pages or six reams of A4 at 5% coverage. I have no reason to doubt these figures, but they do require that you turn down the print density. Printing then costs about 3p per page.

For paper feeding, the LBP-8 has both a paper cartridge that will take 200 pages of A4, and a manual feeder. It is possible to select between the two using the printer driver. The manual feed is invaluable, allowing you to feed in sheets of labels or pieces of non A4 paper. Paper cartridges are also available in other sizes.

Paper jams and feeding through the right number of pages are a tricky subject as

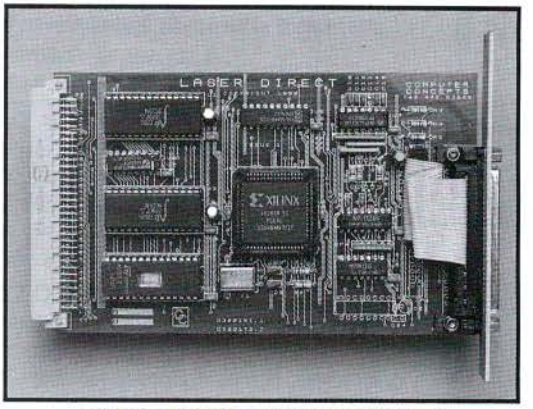
anyone who has argued with a Xerox machine will agree. The old advice to let pages cool down before trying double sided printing is still true. It is little surprise that Canon has not totally solved the problem, but I was rather amused to read in the documentation that before using the manual feed, you should make a little cardboard shutter to block the cartridge feed. This is in fact very necessary, since otherwise the manual feed will pull a page out of the cartridge every once in a while.

PROBLEMS

Unfortunately, if you expect to hit PRINT on the Laser Direct Hi Res and walk away, you are likely to be disappointed. I encountered a number of problems both with hardware and software bugs, and incompatibility both with applications and with equipment. I have heard of other users who have also experienced numerous problems, though I have also spoken to people whose experience is relatively trouble-free. It seems clear that there are problems, and CC claims to be working on them, but this takes time. Under the circumstances it may be as well to try to persuade the supplier of the printer itself to agree to take it back if it proves incompatible with your system.

CONCLUSIONS

In conclusion, these printers give fast excellent quality printing at a reasonable price, and I would not willingly part with mine. However, bearing in mind the problems which I and others have encountered, I would recommend that, if at all possible, you find an existing user with the same set-up as yours, and satisfy yourself that the Hi Res will work correctly under the conditions in which you will use it, before deciding to purchase one.



The Laser Direct Hi Res Expansion Card

Product	*Laser Direct HI Res*
Supplier	*Computer Concepts* *Gaddesden Place,* *Hemel Hempstead,* *Herts HP2 6EX.* *tel. (0442) 63933*
Price	*£387.69 inc. VAT* *(LBP-4 expansion card)* *£1734.24 inc. VAT* *(LBP-8 plus expansion card)*

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• POINTS ARISING • POINTS ARISING • POINTS ARISING •

VIRUS ALERT (Volume 4 Issue 8)

Line 1620 of the magazine listing should read:

```
EQUS "Tamper code: "
```

In other words, the ALIGN statement should be removed from the end of the line. The same alteration should be made to line 1670 of the source code supplied on the magazine disc. This resolves an occasional problem of unexpected characters appearing with the Tamper code.

VIRUS ALERT AUTO-INSTALLER (Volume 4 Issue 9)

The listing given in the magazine for the !Run file showed a WimpSlot of 16K. This should be increased to 32K, as follows:

```
WimpSlot -min 32K -max 32K
```

Users with 4MBytes of RAM can ignore this. RU

Archimedes Software

RISC OS Terminals Plus

A new communications package for the Archie. Consisting of Viewdata and text terminals providing accurate ANSI, VT100 and VT220 emulations. Fully RISC OS compliant. File transfer protocols supported include, ASCII, Xmodem, Ymodem, Zmodem, Kermit and CET Telesoftware. Unlike most programs, these have been written from scratch in ARM code, making them compact, and fast. Easy exchange of data with other programs e.g. mark text for transfer to Edit. File transfers can take place whilst you work with other things. ACF scripts let logon and configuration be set up for easy reuse. Zmodem allows the resumption of interrupted downloads and achieves fast transfers.

Programs, manual, case £17.97 inclusive.

(upgrade from disc 24, £11.98 + old disc)

Disc 7 - Chess Program for The Archimedes.

A Chess program that takes full advantage of RISC OS, installing itself on the icon bar and running on the desktop in a window. You can work with other programs whilst you play Chess. Many features, computer play, hint, save games, edit etc. Risc User July 1991 said: *"Chess is an absolute bargain. .playing at a comparable level it always beat Micro Power's offering. ...this has to be the one to go for".*

Disc 16 - A New Spark RISC OS Archive program

Spark, allows you to store files and directories in archive files in a very compressed form. e.g. sprites often take up only 10% of normal space. Files in archives, can be accessed just like files on disc. Now new Spark series 2.XX, has lots more features. Reads all these formats, zoo, zip, lzh, UNIX and Archie Tar, Compress. Reads and writes PKarc, SEA/PC arc, uucode, atob/CET+, FCET.

Disc 32 - Charm - language and development environment

Charm, is a high level language similar to Pascal and C. This implementation, includes a compiler, linker and assembler, with an editor, and a desktop environment to use them. The Charm system is both fast and ideally suited to being used on 1Mbyte and floppy machines. Charm is not a toy language. Examples and two full scale demos with source code are included. Charm is a low cost way to produce fast ARM code programs from a high level language.

Clip Art Packs

Each pack, consists of three discs, full of black and white sprite format clip art. Spark archives, mean every pack has many 100's of files and Mega bytes of data. Suit Impression, Ovation etc.

Pack #1: Alphabets (decorative letters), Anatomy, Animals, Astrology, Books, Egyptian, borders, snippets of text, pointers (hands and arrows), cards.

Pack #2: Assorted cartoon characters. Escher, Flowers, Foods, Miscellanea.

Pack #3: Music, Monsters, Mythical and religious beasts. People (assorted people plus celebrities). Space, space-travel, and space exploration.

Pack #4: Heads, Christmas/Easter, Transport - cars, boats, trains, planes. Logos+icons.

Pack #5: Victorian woodcuts. Whimsy - cute pictures. All sorts of sports.

Discs/Clip Art packs are £5.99 each all inclusive.

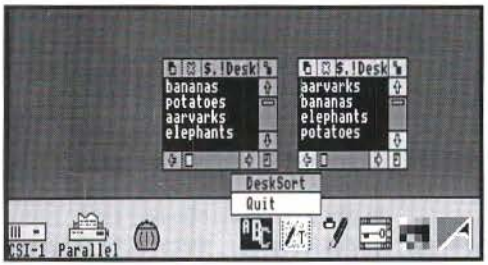
David Pilling, P.O. Box 22, Thornton Cleveleys, Blackpool. FY5 1LR.

Free Air Mail delivery on overseas orders. Extensive range of other Archimedes software available (programmers tools, games, utilities, clip art), please send for free list.

A Desktop File Sorter

by Lee Calcraft

The short application listed here will sort text and data files dragged to its icon bar icon. It makes use of the Icon Bar Shell published in Volume 4 Issue 7, and if you have a copy of that program, very little typing will be required to get DeskSort up and running. For those who do not have a copy of the Icon Bar Shell, the full listing of DeskSort is given here.



Before (left) and after (right) sorting a short text file

WHAT IT DOES

DeskSort is installed on the icon bar in the usual way, by double clicking on its icon in a directory viewer. DeskSort's menu contains just a single entry: Quit, which has the expected effect. To make use of the sorter, just drag a text or data file to the icon bar icon. A beep will be heard, and if the file is a long one, the hourglass will be displayed during the sorting process. The sorted file is then automatically resaved using the same name, and the process is complete.

CREATING THE APPLICATION

To build the DeskSort application, you will need to create a directory named !DeskSort, and save within it appropriate !Run, !Sprites and !RunImage files. The !Run file is an Obey file (use Create then New Obey file from Edit's menu) whose contents are given in listing 1. The !Sprites file should contain a 34x17 sprite named !desksort, and may be created using Paint. !RunImage is the Basic program which appears in listing 2.

FOR ICON BAR SHELL USERS ONLY

If you are using the Icon Bar Shell, you will need to alter the definition of PROCaction to that given in the listing, and append the definition of PROCsortfile. The only other changes concern five lines at the start of the program, plus a couple in the error handler. Delete lines 80 and 150 in the original IbarShell program, and insert the present lines 110 - 150 anywhere early on in the Shell program. Then replace line 530 in the original program with lines 480 - 500.

HOW IT WORKS

The sorting routine is based around a built-in implementation of the Heapsort. SWI "OS_HeapSort" is documented on page 819 of the PRM. In the simplest cases it is called with R0 holding the number of elements to sort, R1 a pointer to an array to be sorted, and R2 the type of object contained in the array, or pointed to by its contents. Table 1 gives the possible values for R2.

R2	R1 points to an array of:
0	unsigned integers
1	integers
2	pointers to unsigned integers
3	pointers to integers
4	pointers to strings (case insens)
5	pointers to strings (case sensitive)
>5	pointer to a custom object in this case, R2 holds the address of a comparison routine

Table 1. The values of R1 and R2 in SWI "OS_HeapSort"

In the very simplest case (R2=0 or 1), R1 points to an array of word-sized integers (signed or unsigned), and these are sorted directly. With R2=2 or greater (in our program R2=4), the array which is sorted is an array of pointers to the original data to be sorted; and only the pointers themselves are sorted (though there are options to sort the actual data as well).

In the case in point, we have set R2=4. This means that the array to be sorted is an array of pointers to a series of text strings. These are held in the area of memory at text_buff%, while the pointers to each individual string are held in the word-sized array at sortkeys%.

LIMITATIONS AND MODIFICATIONS

The program currently makes the following assumptions:

1. There will be no more than 1000 lines to sort.
2. Each line will be a maximum of 80 characters in length, and will be terminated by either ASCII 10 or 13.

You can alter the size limits by adjusting lines 130 - 150, but if you increase these values, you will also need to increase the values allocated with WimpSlot in the !Run file.

At present, the sorting routine is case insensitive. To make it case sensitive, simply alter the last parameter passed to SYS "OS_HeapSort" in PROCsortfile from 4 to 5. A better option would be to set case sensitivity from the menu; but to keep things simple, this has not been implemented in the present listing. An alternative way to achieve the two options would be to test for the Shift key, say, in deciding between the two. For example, if you replace the parameter 4 by:

```
4-INKEY(-1)
```

the sort will be case insensitive unless the Shift key is held down when the sort begins.

Sorting currently occurs in order of ascending ASCII value. Reversing this is simple. Just reverse the order in which the sorted lines are saved, by changing line 1140 to:

```
FOR i%=no_lines% TO 1 STEP -1
```

One other feature which could be improved upon is the way in which the sorted file is saved. This really ought to offer a *Save as* dialogue box, so that the user can decide the name under which the sorted file will be saved; but this would add 100 lines or so to the listing. As a half-way measure, you may like to alter the program so that the sorted file is saved under a modified name (add "-s" to the filename perhaps). This could prevent accidental sorting of the wrong file, for example. Also, as the program currently stands, it will only sort the first 1000 lines of a large file, so when it saves it back the rest will be lost. Using an altered name for the saving routine would avoid this.

Listing 1. !Run Obey file for DeskSort

```
  !Run file for DeskSort
WimpSlot -min 128k -max 128k
Run <Obey$Dir>.!RunImage
```

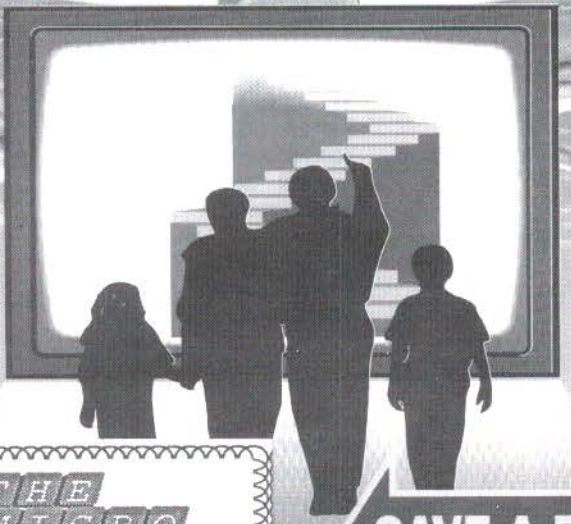
Listing 2

```
   10 REM             >!RunImage
   20 REM Program     DeskSort
   30 REM Version     0.1
   40 REM Author      Lee Calcraft
   50 REM Using       IbarShell
   60 REM             by Ben Avison
   70 REM RISC User October 1991
   80 REM Program     Subject to Copyright
   90 REM             Not Public Domain
  100 :
  110 Application$="DeskSort"
  120 Spritename$="!desksort"
  130 inputmax%=1000:file%=0
  140 DIM sortkeys% inputmax%*4
  150 DIM text_buff% inputmax%*80
  160 :
  170 windowhandle%=-1
  180 DIM block% &100,menu% 51
  190 :
  200 exit%=FALSE
  210 PROCinitialise
  220 ON ERROR PROCerror
  230 REPEAT
  240 PROCpoll
  250 UNTIL exit%=TRUE
  260 SYS"Wimp_CloseDown"
  270 END
  280 :
  290 DEF PROCinitialise
  300 SYS"Wimp_Initialise",200,&4b534154
,Application$
  310 block%!0=windowhandle%
  320 block%!4=0:block%!8=0
  330 block%!12=68:block%!16=68
```

```
  340 block%!20=&301A
  350 $(block%+24)=Spritename$+CHR$0
  360 SYS"Wimp_CreateIcon",,block% TO ic
onhandle%
  370 $menu%=Application$
  380 menu%?12=7:menu%?13=2
  390 menu%?14=7:menu%?15=0
  400 IF LEN(Application$)>4 THEN menuch
ars%=LEN(Application$) ELSE menuchars%=4
  410 menu%!16=12+16*menuchars%
  420 menu%!20=44:menu%!24=0
  430 menu%!28=128:menu%!32=-1
  440 menu%!36=&7009031
  450 $(menu%+40)="Quit"+CHR$0
  460 ENDPROC
  470 :
  480 DEF PROCerror
  490 SYS "Hourglass_Smash"
  500 IF file%<>0 THEN file%=0:CLOSE#fil
e%
  510 !block%=ERR
  520 $(block%+4)=REPORT$+" (Error code
"+STR$(ERL)+")"+CHR$0
  530 SYS"Wimp_ReportError",block%,1,App
lication$
  540 ENDPROC
  550 :
  560 DEF PROCpoll
  570 SYS"Wimp_Poll",&1831,block% TO rea
son%
  580 CASE reason% OF
  590 WHEN 6:PROCmouseclick
  600 WHEN 9:exit%=TRUE
  610 WHEN 17,18:PROCmessage
  620 ENDCASE
  630 ENDPROC
  640 :
  650 DEF PROCmouseclick
  660 CASE block%!8 OF
  670 WHEN 2:SYS"Wimp_CreateMenu",,menu%
,block%!0-68,140
  680 WHEN 4:PROCaction(TRUE,FALSE,FALSE
,0,"")
  690 ENDCASE
  700 ENDPROC
  710 :
  720 DEF PROCmessage
  730 CASE block%!16 OF
  740 WHEN 0:exit%=TRUE
  750 WHEN 3
  760 pathname$="":counter=block%+44
  770 WHILE ?counter
  780 pathname$+=CHR$?counter
  790 counter+=1:ENDWHILE
  800 type%=block%!40
  810 PROCaction(FALSE,type%=&1000,type%
=&2000,type%,pathname$)
  820 ENDCASE
  830 ENDPROC
  840 :
  850 DEF PROCaction(click%,dir%,appl%,f
iletype%,pathname$)
  860 IF click% OR dir% OR appl% THEN EN
DPROC
  870 IF filetype%<>&fff AND filetype%<>
&ffd THEN ENDPROC
  880 SOUND 1,-15,120,2
  890 SYS "Hourglass_On"
  900 PROCsortfile(pathname$)
  910 SYS "Hourglass_Off"
  920 ENDPROC
  930 :
  940 DEF PROCsortfile(file$)
  950 no_lines%=0
  960 text_ptr%=text_buff%
  970 sort_ptr%=sortkeys%
  980 file%=OPENUP(file$)
  990 IF file%=0 THEN ERROR 255,"Can't o
pen "+file$
 1000 WHILE no_lines%<=inputmax% AND NOT
 EOF#file%
 1010 input$=GET$#file%
 1020 IF input$<>"" THEN
 1030 no_lines%+=1
 1040 !sort_ptr%=text_ptr%
 1050 $text_ptr%=input$+CHR$13
 1060 text_ptr%+=LEN(input$)+1
 1070 sort_ptr%+=4
 1080 ENDIF
 1090 ENDWHILE
 1100 SYS "OS_HeapSort",no_lines%,sortke
ys%,4
 1110 PTR#file%=0
 1120 sort_ptr%=sortkeys%
 1130 FOR i%=1 TO no_lines%
 1140 BPUT#file%,$(!sort_ptr%)
 1150 sort_ptr%+=4
 1160 NEXT
 1170 CLOSE#file%:file%=0
 1180 ENDPROC
```

THE MICRO USER

Volume 9 Number 7 September 1991 £1.50



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Archimedes Clip Art

Alan Wrigley looks at some recent releases.

Back in RISC User Volume 3 Issue 8 I reviewed a selection of DTP resources, including several collections of clip art. Since then, the range of clip art available for the Arc has grown considerably, and the time has come to look again at what is on the market.

All DTP packages allow you to import pictures into a document, and in the case of the Arc these will be either Draw format (vector graphics) or sprites (pixel-based images). All currently available DTP packages accept both of these. When selecting pictures for use in a document, it is necessary to consider a number of factors. Sprites have their resolution fixed at the size at which the sprite was created, so scaling the image by a significant amount may result in loss of clarity. Draw files, on the other hand, can be scaled over a wide range, and the resolution will always match the scale.

Generally speaking, sprites are more suitable for complex images such as digitised pictures, while Draw format is better for stylised images or detailed technical drawings, though this is not a hard and fast rule. One limiting factor of complex Draw files, however, is the very long time it takes to render them on the screen, which makes the redraw process painfully slow when moving around a document (though with Ovation, for example, you can hide the pictures temporarily to get around this).

The final consideration, of course, is the quality of the pictures themselves. How good is the artist? How suitable are they for the purpose? Do they offer an adequate representation of the subject? I will consider all these questions when looking at the four individual collections in this review. These come from David Pilling, The Scottish Schools Equipment Research Centre, The Graphics Factory and Micro Studio.

CLIP ART FROM DAVID PILLING

Five packs of clip art are available from David Pilling (see advert elsewhere in this issue). Each pack consists of three discs containing compressed sprite files - in all about 1000 pictures (20 Mbytes). All the pictures are black-and-white, and cover a wide range of sizes from 87x23 to 1854x1405 pixels. The range of subjects is equally wide.

In addition to the usual subjects such as animals, people, sport, transport etc., some more unusual subjects are covered, including Egyptian hieroglyphics, astrology and mythology.

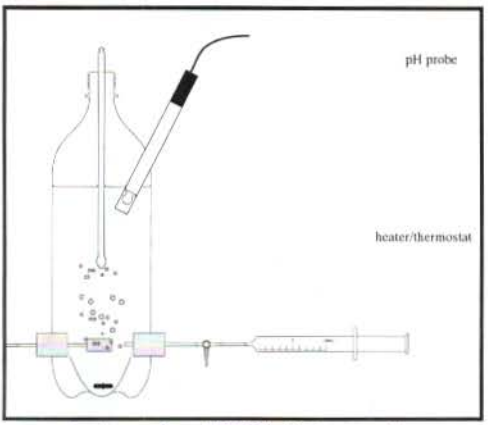
All the pictures originate from artwork rather than real-life images (i.e. they are not digitised photos), and are in true monochrome with no half-tones. Mostly they have the feel of hand-drawn book illustrations, and I suspect that this is where the majority have originated. There is a strong American flavour to the collection, no doubt reflecting PC origins. This applies to much clip art, and I feel there is a need in the market for some good British or European images.

A typical picture from the David Pilling collection

All in all, this is a worthwhile collection and should provide much material for DTP users. The pictures are grouped into subjects according to which pack you buy, so you should be able to pick out those packs which will be useful to you.

SSERC GRAPHICS LIBRARY

The Scottish Schools Equipment Research Centre has a set of three discs available covering scientific and technological subjects. These are all Draw files, and contain images relating to chemistry, biology, mechanics, physics, electronics and computing. This is not just a miscellaneous collection of pictures gathered from various sources and thrown together on a disc, but a comprehensive set of technical drawings carefully compiled for the benefit of scientific and technical users.



An image from SSERC's biology section

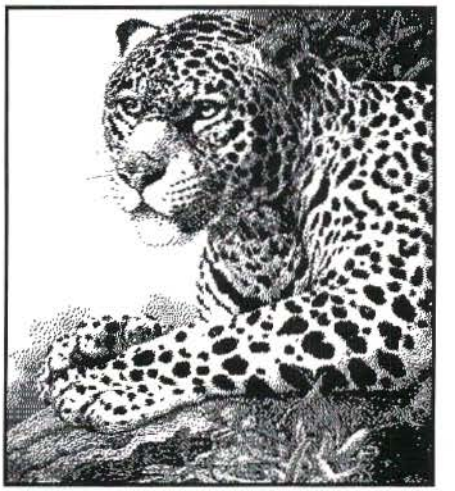
Clearly a lot of thought has gone into this graphics library. The range is comprehensive - there are numerous beakers, flasks, electrical connectors, sensors, electronic components, laboratory equipment and meters, to name just a few. The quality and accuracy of all the pictures is excellent; not only this, but the scale has been arranged such that, at 3:2 magnification in Draw, all equipment is life-size on a standard Archimedes monitor.

Some Basic programs are also provided which allow you to create gears, cylinders, waveforms, threads and so on to your own specification, and output the results as Draw files.

The final touch is a set of notes which accompanies the discs giving some useful hints on manipulating the images in Draw, and also a printout of all the directory viewers from each disc as well as all the images themselves. So no more hunting through floppies and waiting while the files are loaded into Draw to find the picture you want. Well done SSERC - this is an excellent product and must surely be invaluable for anyone who needs scientific drawings.

THE GRAPHICS FACTORY

A set of four clip art discs entitled *The ClipArt Collection* is available from the Graphics Factory. The pictures are all sprite files, most of which a similar feel to the Pilling collection described above. In fact, a few of the pictures are the same, indicating a common origin, most likely from PC public domain clip art. The subjects covered are largely the usual ones such as animals, people, sport, cartoons, transport, festive occasions, signs and symbols and so on.



A Graphics Factory sprite file

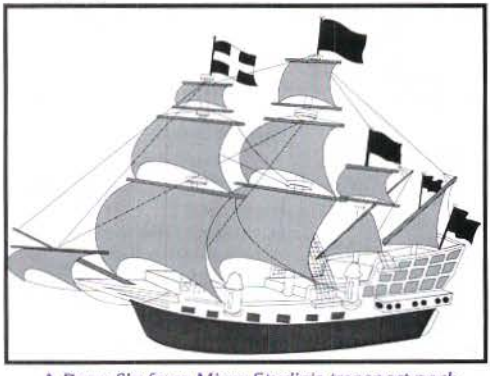
The quality of the pictures is good, and sizes cover a similar range to those from David Pilling, though many of them are concentrated into the middle of the range (a typical example would be say 400x300 pixels). Quite a lot of the images, particularly those involving people, have a cartoon flavour. However, some subjects are covered more broadly than others. For example there is a good range of sporting images covering many different sports, while at the other end of the scale there are 52 Garfields and 14

Santas - slight overkill in my opinion. One thing I found slightly annoying is that the names of the individual sprites do not reflect the actual subject, but have been given generic names, e.g. *Animal03* or *Sport12*. When you have to search through several discs full of images to find the one you want, this is unhelpful, and contrasts with the other collections reviewed here.

Nevertheless, overall there is much here of use if these are the kind of images you require. They do, however, work out rather more expensive per disc than those from David Pilling.

MICRO STUDIO

Finally, there are some new clip art collections from Micro Studio, whose *World Geography Maps* I covered in my earlier review. The library as a whole has a clear educational bias, with sets available on science, historical costume, nature and wildlife, prehistoric animals, tools, children's pictures, media (i.e. digitised news pictures), transport and cartoons. Some of the sets are Draw files, others are sprites, largely according to the nature of the material. For example, news pictures and wildlife are best served by digitised sprites, whereas technical subjects such as tools and transport are more appropriate as Draw files.



A Draw file from Micro Studio's transport pack

I was only sent some samples rather than the complete collection, but the image quality is of a high standard. Like the SSERC library, the images appear to have been compiled with a purpose in mind rather than accumulated from PD sources according to what happened to be available. This should make them suitable for educational use (though I was a little distressed to see that the person who compiled the Magpie demo which displayed the pictures could not spell "mammals"). A larger sample of the transport collection was provided, from which I could see that there was a good range of subject matter, both traditional and modern. There was none of the American bias mentioned earlier.

The number of discs in a pack varies (typically 2-3) though many of them have been highly compressed. This might make the discs look expensive when compared to others, but you should bear in mind that these are all original pictures and have been produced to a high standard.

CONCLUSION

Clip art is a growing industry on the Arc, and this review has not covered everything available. Of those described here, both the Micro Studio and the SSERC collections should be invaluable for educational work, while the others provide more general images which should find wide use in DTP. The Pilling collection is more comprehensive, but the Graphics Factory has promised some new discs in time for the Acorn User Show.

This month's magazine disc contains some example files from each of the collections reviewed here.

Supplier	**Price**
David Pilling *PO Box 22, Thornton Cleveleys,* *Blackpool FY5 1LR*	*£5.99 inc. per pack of 3 discs*
SSERC *24 Bernard Terrace,* *Edinburgh EH8 9NX* *tel. 031-668 4421*	*£30.00 complete set (3 discs) (discount to SSERC members)*
The Graphics Factory *Units 18e/18f Boxer Place,* *Moss Side Employment Centre,* *Leyland, Preston PR5 3QL* *tel. (0772) 623000*	*£23.44 inc. VAT (4-disc set)*
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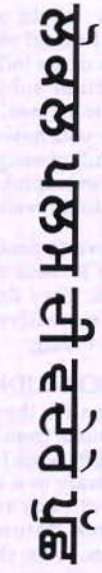

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Procedure Library Manager

We present an application by Carl Edwards which enables programmers to keep track of all their standard routines.

This application is supplied only on this month's magazine disc.

Once you have written more than one or two programs, you will find that the same routines can be used over and over again. This is particularly true of Wimp programming, where the procedures to handle Wimp messages or keypresses, for example, may hardly vary from one program to another. Experienced programmers soon build up a store of useful procedures and functions which can save a great deal of time when developing a new program.

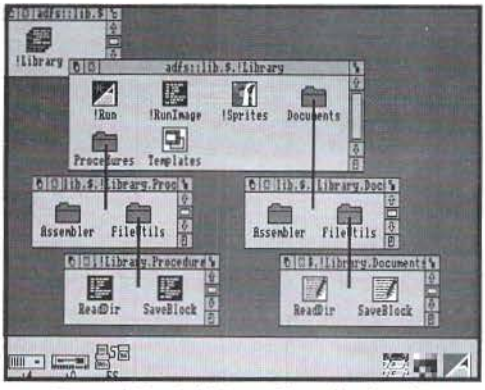


Figure 1. Typical Library hierarchy showing equivalent procedure and documentation directories

But how do you find the routine you want when they may be scattered over several discs and buried in other programs? The answer is to use the *Library* application on this month's disc. This is designed to help you manage your resources in a much more effective and productive manner. Routines are stored in sub-directories within the library manager application, each sub-directory being given an appropriate name to reflect the type of routines it contains, e.g. *Assembler*, *FileUtils* and so on. Each routine can also be documented by a text file, so you never again need to scratch your head to remember the purpose of a routine you wrote months ago.

The Library Manager provides the following facilities:

1. You may extract a routine from the library and save it.

2. You may append a routine or set of routines onto an existing program file.

3. You may display the documentation for any routine, and save this separately if required.

Full instructions on how to use the application are provided on the magazine disc. To register your own routines with the Library Manager, you should place them inside appropriately named sub-directories, as described above. These sub-directories must be inside a directory called *Procedures*, which is itself inside the *!Library* application directory. If you wish to document the routines, you should similarly create a text file (of the same name as the routine being documented), place this inside a sub-directory with the same name as the routine's sub-directory, and put this in a directory called *Documents*. Figure 1 shows the hierarchical structure more graphically.

The routines themselves may be either Basic files or text files, so you could use the Library Manager for managing C source files or Basic programs stored as text, for example. However, when using the append option, no check is made to ensure that the routine to be appended, and the file to which it is being appended, are of the same type, so you must make sure of this yourself.

RU

New from RISC Developments

DeskEdit

DeskEdit is the ultimate all-purpose editor for the Archimedes, with special features tailored for use with plain text, Basic and C source.

Here are some of DeskEdit's many features:

General editing features

Three special Find and Replace modes - from Simple to Power Search - the latter uses Twin-like specifiers

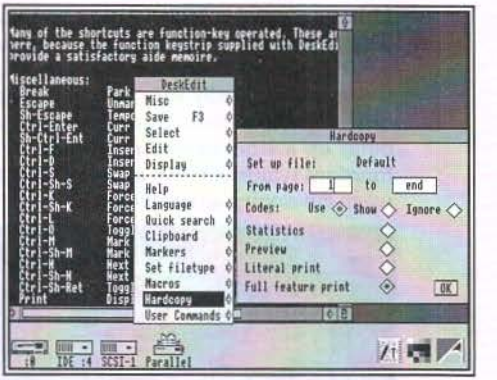
Additional Quick-Search mode for rapid retrieval

Text macros to insert user strings in both text and source code

Special Undelete buffer for moving text around, in addition to Edit-style Undo/Redo

Dedicated markers and position finders for finding your way around large files - create your own automatic indexer at the top of any file, and use it to move at a single keypress to any point referred to in your index. Ideal for both text use, and Basic and C source code.

Clipboard, providing an alternative way to move text around



Editing Basic

Plus

On screen Help - full documentation in a scrollable window

Instant file info feature, and current directory setter

Caret flash controller for DeskEdit and other applications

Customised user commands to open directories, run other applications and launch Obey files - all from DeskEdit's menu

Numerous keyboard shortcuts including date and filename insertion, changing case, moving windows to the front or back of the stack, parking the mouse pointer, inserting printer codes etc. etc.

This feature-packe
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**Everything that
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ıdvanced new multi-tasking Text Editor for the Archimedes.

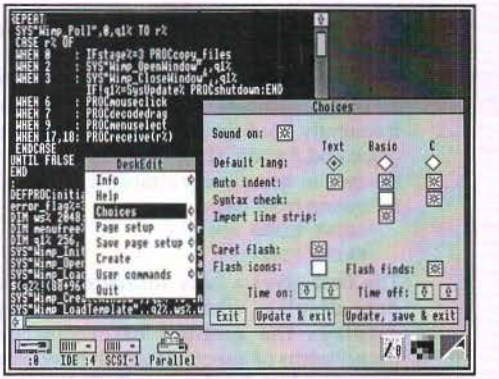
Printout

Printout makes full use of Acorn's version 2 drivers to provide fast text printout including style codes for bold, underline, italics, page breaks etc - all entered at the keyboard using simple keypresses.

Special text printing options with headers, footers, page numbering and style codes. Headers and footers can contain filename, date, time, page numbers (optionally offset) etc, and may contain their own style codes, and be left right or centre justified.

Print options include a useful Preview mode allowing you to see exactly what would be printed, before using any paper. This is useful for checking headers, footers page breaks etc.

Additionally a Statistics option gives a brief summary of aspects of the text to be printed, including character, word, line and page count.



Hardcopy options

Language specific features:

Plain text

DeskEdit will format word-wrapped text as you type (and to prove it, DeskEdit's 40 page manual was created and edited using DeskEdit itself).

Basic

Drag a Basic file to the icon, and it will automatically be detokenised and loaded into DeskEdit ready for editing. Press F3 to retokenise and save it after editing. Optional line number stripping.

Simple syntax checker for checking as you type.

Special Basic browser:

Ctrl R steps through all REM lines
Ctrl D steps through all procedure and function definitions
Ctrl P steps through all procedure references
Ctrl F steps through all function references

C language

Special C language features include a simple syntax checker which operates as you type.

Auto indent facility combined with automatic generation of opening braces stramlines source code entry.

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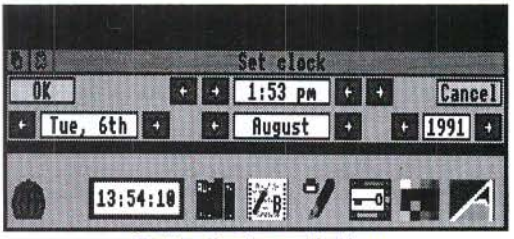
Time on the Arc

With the imminent passing of British Summer Time, Lee Calcraft takes a look at the way in which the Archimedes handles date and time.

The Archimedes positively bristles with timers, most of which are accessible via OS_Word calls (see the PRM pp 549 ff). But I want to concentrate here on the two most frequently used timers: the so-called system clock and Basic's TIME counter. You can see the two in action very simply by typing the following from Basic:

```
PRINT TIME$ and
PRINT TIME
```

The first gives a fully formatted time and date display, while the second simply displays the number of centiseconds (hundredths of a second) which have passed since the last hard reset. Both timers are interesting in their own way, and are easy to experiment with. We will take a look at the real-time clock first.



Setting the time with Alarm

THE REAL-TIME CLOCK

The time displayed by TIME$ is based on the value held in the Archimedes' special clock chip. The chip is a CMOS type, meaning that it draws very little current, and it is powered by batteries inside the Arc so that it can keep track of the date and time even when the computer is switched off. In real terms the CMOS clock, as it is called, holds the time as a single five-byte number, which is incremented once every centisecond. It represents the number of centiseconds which have elapsed since 00:00:00 on January 1 1900. It is a sobering thought that it only takes five bytes of RAM to hold more than a lifetime of centiseconds.

When you use the pseudo-variable TIME$, Basic converts a software copy of this five-byte number into a time and date in the form:

```
Fri,26 Jul 1991.11:21:38
```

Special SWI calls are provided to allow the data held in the timer to be output in any required format, including giving the names of days and months in full, using a 24 hour clock etc., and we will return to this in a future article.

SETTING THE CLOCK

The simplest way to set the system clock is to use the Alarm application on Acorn's Applications disc 2. This has a very easy-to-use clock setting routine. If you want to perform the job from the keyboard, there are two ways. The hardest is to assign a suitable string to TIME$ just as you would any other Basic variable. For example, you might type:

```
TIME$="Fri,26 Jul 1991.13:44:00"
```

but this is a little awkward, because you need to get the string exactly right for it to work (and you will not be informed if it doesn't). You can of course use PRINT TIME$ first, then use Copy key editing to create the new string, but it is still not so easy as a second method, which makes use of RISC OS system variables.

RISC OS maintains two useful system variables:

```
Sys$Date and
Sys$Time
```

If you type:

```
*Echo <Sys$Date>
```

the date will be displayed, while:

```
*Echo <Sys$Time>
```

will display the time. If you want to alter the time (as you might when the clocks go forward or back), simply use:

```
*Set Sys$Time 15:25:00
```

or whatever time you want to set. Times or dates set in this way find their way back to the real-time clock, and to TIME$.

EXTRACTING PARTS OF THE TIME OR DATE

This is easily achieved using the LEFT$ and MID$ functions on TIME$. The program in listing 1 shows how it is done. Based on this idea, you could easily write a very short program to increase or decrease the hour by one, to implement BST changes. The five line program in listing 2 will increment the clock setting by one hour when run. If you set the value of increment to -1, it will decrement it. To keep the program simple, no check is made to see that changing the hour does not cause the day to change. So don't increment between 11pm and midnight, or decrement between midnight and 1am.

Listing 1

```
10 REM >Time-1
20 time$=TIME$
30 PRINT "Day:   ";LEFT$(time$,3)
40 PRINT "Date:  ";MID$(time$,5,2)
50 PRINT "Month: ";MID$(time$,8,3)
60 PRINT "Year:  ";MID$(time$,12,4)
70 PRINT "Hour:  ";MID$(time$,17,2)
80 PRINT "Mins:  ";MID$(time$,20,2)
90 PRINT "Secs:  ";MID$(time$,23,2)
```

Listing 2

```
10 REM >Time-2
20 time$=TIME$
30 hour$=STR$(1+VAL(MID$(time$,17,2))
)
40 IF LEN(hour$)<2 hour$="0"+hour$
50 TIME$=LEFT$(time$,16)+hour$+RIGHT$
(time$,6)
60 PRINT "Time reset to "TIME$
```

USING BASIC'S TIME VARIABLE

Basic's TIME counter is implemented in software (no special chips involved), and simply counts in centiseconds. When the computer is switched on or when a hard reset is performed, the counter is reset to zero. You can also set it to whatever value you like by using the form:

```
TIME=xxx
```

where xxx is any integer. It will then continue to increment from the value which it was assigned.

Although you can alter its value in this way, it is best not to do so, because all incarnations of Basic share the same counter. This means that if one multi-tasking program is making use of TIME when another sets it to some value, unpredictable results could occur. So if you need a two-second time delay in a program you should use something like the following:

```
target_time=TIME+200
REPEAT UNTIL TIME>=target_time
```

By using a variable to hold the target time, we avoid the necessity of having to set TIME to zero and then wait for it to reach a particular value. Of course, in a multi-tasking program you would not normally hog the processor in a time-wasting loop. The correct approach would be to use a call to SYS Wimp_PollIdle" which will cause the Wimp to return to your application after a predetermined delay.

If you are making use of TIME outside the Wimp environment, it may be as well to remember a further limitation: eventually, this timer will cycle around to zero. The counter uses a four byte register, which progressively takes values from zero to &FFFFFFFF. One centisecond after it reaches this value, it cycles around to zero. However, well before it reaches this value, it will appear to start behaving oddly.

The reason for this is that in Basic, all integers are stored using the two's complement convention. This means that the value -1 for example is stored as &FFFFFFFF. The highest positive integer that Basic can handle is &7FFFFFFF (2.14748365E9). One centisecond after the TIME variable reaches this value, it takes the value &80000000. This is -2.14748365E9 - the most negative value that any integer can take on the Archimedes. It then continues to increase in centisecond steps until it reaches zero. Fortunately the computer would have to be left turned on for many days (249 days according to my calculations - but I have not tested this!) before TIME assumes a negative value.

With time negative, and space at an end, we must draw to a halt. For further reading, the section on Sys$DateFormat in the RISC OS User Guide, page 335 may be of interest; and if you have a copy of the PRM, then SYS "OS_ConvertDateAndTime" is worth a look (page 576). RU

Equasor

Mike Williams examines Computer Concepts' equation generator, designed to augment your word processor or DTP software.

Having recently tried to include some moderately complex mathematics in a document using just a word processor, and failed, I approached this review of Computer Concepts' *Equasor* with some enthusiasm. However, if like me, you expect a specialised package to do all the work for you, then you are doomed to disappointment. You need to spend the time and effort to master this software, and achieving a highly pleasing result calls for not a little fine tuning. However, without the likes of Equasor the task would be well nigh impossible.

Equasor is supplied on a single disc accompanied by an 80 page wire-bound manual and an addendum (important). Equasor uses outline fonts, and to use Equasor you need a copy of the Outline Font Manager (version 2.42 or later), which for licence restrictions is not supplied with Equasor.

Two outline fonts are supplied on the disc, *MathGreek*, a full character set based on the standard Symbol, and *Equasor* a limited set of brackets and integral signs. You will also need a copy of Acorn's Trinity font (preferably the outline version) before Equasor can be persuaded to work. Other fonts can also be used if available. For those with a PostScript printer, the Equasor disc also contains the necessary prolog file (for mapping MathGreek characters onto the Symbol font which most PostScript printers can handle). Instructions (in the addendum) are supplied for doing this, but the task needs care.

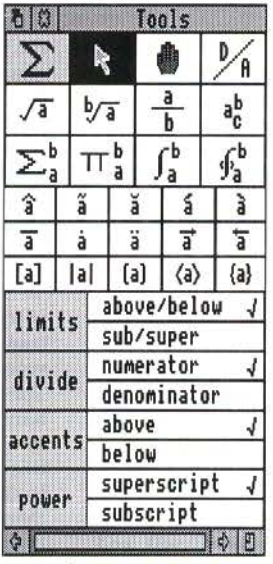


Figure 1. The full 'Tools' menu

The results of using Equasor can be saved in Equasor's own format (for further editing), or as a Draw file. The latter format means that any equation can be loaded into Draw for further manipulation if required, and can be easily imported into a DTP documents created, for example, with BEEBUG's Ovation or CC's own Impression.

Once installed on the icon bar, clicking with Select opens a window within which equations can be 'written'. Three other windows can usefully be displayed at the same time: Tools of which more anon, Symbols showing the MathGreek character set, and Operators providing a range of mathematical functions for immediate selection (cos, cosh, sinh etc.).

Selecting *New Equation* from Equasor's menu displays a pair of crosswires which are used to mark the start of a new equation. As the equation is built up, characters can be entered from the keyboard, or selected from the Symbols and Operators windows. The Tools (see figure 1) allow more complex mathematical groupings to be constructed. For example, selecting the integral sign not only positions this at the caret, but comes complete with the correct positions for entering upper and lower limits. Summation signs and various forms of bracket notation can also be selected, and these have the significant merit of increasing (or decreasing) dynamically to fit the size of the resulting expression (see the various illustrations).

The Tools also allow constructions such as powers, subscripts, fractions, square root

symbols, etc. to be selected as well. With some practice I found this all worked quite well, and equations and expressions could be constructed with no great difficulty. However, as a mathematician by training I often felt that the results did not look quite right - the relative sizes and positions of the elements comprising an expression or equation were not always what I would have preferred.

$$F(x) = \frac{1}{\sqrt{2\Pi}} \int_{-\infty}^{+\infty} e^{-\frac{1}{2}x^2} dx$$

That's where two further menu options can be brought into play. The *Style* option leads to a dialogue box allowing you to select and edit various attributes - choice of font, size, aspect ratio, spacing and leading - which determine the styles used by Equasor for variables and operators. Changing anything here causes that change to be applied throughout the current document. In other words, we have something similar to the style sheets used by most DTP packages. The *Effects* dialogue box allows similar choices to be made in respect of selected characters (or groups of characters). Thus the initial appearance of an equation can be manually adjusted and improved, but this does all take quite a bit of time.

$$X = \sqrt{\frac{12}{5}} \left(\sum_{1}^{5} U_i - \frac{5}{2} \right)$$

Many other facilities are available, and many are borrowed in concept from word processing and DTP. There are options to cut and paste, to drag equations around the work area to reposition them, to change the scale of the view and so on.

$$x = -\frac{1}{\alpha} \log(1 - U)$$

The Tools menu also offers considerable flexibility. Many of the options have associated switches - the divide (fraction) structure allows you to choose whether the existing element in an equation is to be treated as the numerator or the denominator. You can also use one of the Tools options to create your own structure, that is a group of sub-objects related in terms of position as you choose. This is relatively complex, as the manual acknowledges, and users are largely left to themselves in determining how this works.

$$F(x) = \int_{0}^{x} \alpha e^{-\alpha x} dx$$

CONCLUSIONS

By and large this is an excellent product. It addresses a specific requirement well, and has no competitor in this specialised field. The manual is quite adequate, though for my taste there was too much introductory material of one kind or another before I could begin to use Equasor in earnest. I am somewhat critical of the resulting mathematical expressions produced by Equasor in the first instance; too often, detailed modification needs to be made to achieve the best result. Moreover, I do not consider the software to be that robust, though it never actually lost my work.

$$U \leq e^{-\frac{1}{2}(x-1)^2}$$

The general style of menus and dialogue boxes is CC's own, and for one who is unfamiliar with that company's Impression, the lack of true RISC OS standardisation did not help the learning process. However, the results can be easily imported into any application which can use Draw files, making Equasor of wide application. For those who need this specialised form of word processing, Equasor more than fits the bill, and there is nothing else from which to choose.

Product	*Equasor*
Supplier	*Computer Concepts Ltd. Gaddesden Place, Hemel Hempstead, Herts HP2 6EX. Tel. (0442) 63933.*
Price	*£57.57 inc. VAT*

RU

New Releases October 1991

DEMOS

PD36 Disc *
Contains three demos, Leapin' Fish, SinDemo and Swallow.

PD37 Disc *
Contains a massive four-part demo called 'No RISC No Fun'. This has to bethe best demo yet for the Arc. Amazing!

DRAWING AND ART

PD41 Disc *
Contains four applications: 'Display' allows the display of Draw files bydragging them into a window. 'Drawplus' is an object oriented drawingpackage that may be used as an alternative to Acorn's Draw supplied withyour Archimedes or A3000. Drawplus has many enhancements over Draw.'Drawstrip' is a program to enable the easy creation of function keystripsusing Draw. 'Drop' enables Draw files to be rotated in 3D and then savedagain in their new perspective.

MUSIC

PD08 Disc *
Contains Soundtracker playroutine plus the following tunes:Setrox, Tarzan, TGM, TheModel2, TjatMikes, Tocatta, Unit, Vprtex, We're, Yezz.

PD09 Disc *
Contains Soundtracker playroutine plus the following tunes:Acid_House, Bananas, Cambod, Crok, Cute, Dallas, Deadlock, Dragnet, Yazoo.

PD 10 Disc *
Contains Soundtracker playroutine plus the following tunes:DemoSmash, FFSound, Five, GSCTheme, HiEnergy, Oxygene2, Piano, PopCorn, PumpUp.

PD 11 Disc *
Contains Soundtracker playroutine plus the following tunes: Rescue, Rockit, Round,Scratch, Scratch2, Show, SmokeOn.

PD 40 Disc *
Contains the Jukebox playroutine plus the following Tracker tunes:Acid House, TeddyBears, Canon, Breathe, Six2, Rag It.

GAMES

PD 39 Disc *
Contains 6 games programs, Pac Man (in a window!), Arc Patience,Breakout (inside an icon!!!), Creepie (Centipede), Pelmanism and International Golf (Brilliant!)

UTILITIES AND APPLICATIONS

PD 38 Disc *
Contains 15 utilities and applications. These are a 1st Word Plus fileconverter, a 1st Word Plus printer driver for Star LC200, a text outlinerapplication, a hypertext program (like Genesis), a CD database, a video tapedatabase, CMOS RAM saver and loader, disc sector editor, fast formatter,font printer, file save remimder, a COPY options setter, and TEXT to DTPfile converters, plus a print spooler.

RISC User

DEMOS

PD12 Disc
Contains 5 sound and graphics demos from Hugo Fiennes of the Serial Port. All five are stunning examples of what the Arc is capable of.

PD21 Disc
Contains three demos, Balls, Balls2 and BIA-Tetris. The latter is a game aswell as a demo.

PD22 Disc
Contains three demos, Noah, Chips and Demo01.

PD23 Disc
Contains four demos, Bounce, Crimbo, ColDemo and Rotate.

PD24 Disc
Contains three demos, Demo, Gopher and Overscan.

PD25 Disc
Contains four demos, Deskballs, DudsDemo, EgIntro, and Z-Brother.

PD26 Disc
Contains four demos, Sister, SkullDemo and Wibble.

PD27 Disc
Contains two demos, GrannyChow and Windows

GRAPHICS

PD13 Disc
Contains the !Projector application that displays films created withthe Ace Computing Mogul package. Six example films are included.

PD18 Disc
Contains a program that displays several still and animated ray traced pictures. PD33 Disc Contains a program that displays several still and animated ray tracedpictures.

EDUCATION

PD14 Disc
Contains !REG, a student register system which replaces classroom registers.A system for managing the recording and reporting required by the NationalCurriculum and data files for Pipedream for NC statements of attainment inscience.

DRAWING AND ART

PD15 Disc
Contains Arctist+ and BigM, both 256 colour art packages, along withDesign, a symmetrical pattern designer.

MUSIC

PD01 Disc
Contains Soundtracker playroutine plus the following tunes: Aces-Hi, Acidbat2, Afl, Alf, ArtNoise, AxelF, Backpopped, Big, Blitzwing, Blizzard02.

PD02 Disc
Contains Soundtracker playroutine plus the following tunes: BatMix, Bobby, Brill, Burning, Chartmix, Chipgene, Demo2.

PD03 Disc
Contains Soundtracker playroutine plus the following tunes: Confusion, Crack, Criminal, Dear, Demons, Dns, Elephant.

PD04 Disc
Contains Soundtracker playroutine plus the following tunes: Doc1, Funky, Ducksong, Electric_2, EndTheme, Enutomed, Equinoxe5, FinalTFDMI, FinalVis.

PD05 Disc
Contains Soundtracker playroutine plus the following tunes: Fyc, GoodTune, Hello, HowDeepIs, Huba, Humanoid, Hunters, Hymn, Idea, Igarun, IntoB.

PD06 Disc
Contains Soundtracker play-routine plus the following tunes:

Public Domain Discs

Jazzid, Jmj_China, LastNinja2, Like, Magnetic4, MegaForce0, Minimize, Mod, New_Biz.

PD07 Disc
Contains Soundtracker playroutine plus the following tunes:MyWay, Nothing-2, Oooerr, Outrun, Pacman, Pat, PetShop, Pretend, SaySaySay2, Steeve

PD16 Disc
Contains 230 tunes for loading into the music package Maestro, withenough variety to suit most tastes.

TRICKS AND NOVELTIES

PD 17 Disc
Contains a collection of 27 amusing trick and novelty programs. Some of them produce the weirdest effects!

PD 32 Disc
Contains an application called Cookie. When run, it puts up awindow containing a 'fortune cookie' or a well-known saying or piece ofphilosophy. Be warned! This program is very addictive once seen, also ratherzany not to mention, occasionally saucy! There are some 6000 sayings. Alsoon this disc is a scrolltext demo with soundtrack music called Invade thatalso features a space invaders game within it.

GAMES

PD 19 Disc
Contains 10 games programs, Adevnture, Battle, Battleships, Connect4,Darts, Fish (Pelmanism), Fruit Machine, Golf, Hangman and Impact.

PD 20 Disc
Contains 12 games programs, Invaders, Line Of Five, Othello, Pelmanism,Rocks, Rubik Cube, Simon, Solitaire, Star Trek, Tetris, Tile Trial andYahtzee.

Public Domain Sampler Disc (PDS1)

Ccontains sample programs from the Beebug Public Domain Software Library.

SOUNDTRACKER
The Soundtracker application is used to play back a music file ***Toccata*** made of real sampled sounds which are sequenced to form a complete tune lasting several minutes. The quality of this is quite stunning, particularly if played through the computer's monitor speaker, or a hi-fi system.

ACCOUNTS
This is a home accounts program. There are no instructions included with the program but all functions are selected from the main menu which is self explanatory. An example file is included.

SC LABEL
A versatile disc labelling program producing professional looking labels for 3.5" discs. A Help file is included with the program.

FOLLOW
A novelty program that when run puts a pair of beady eyes on the Desktop which follow the mouse pointer wherever it goes. Eerie!

HANGMAN
A well presented and implemented version of the old word game of Hangman with an animated finale.

MULTIPRINT
A utility to allow the printing of files by creating a task list of the files to print before sending them to the printer. A Help file is included within the program.

ROTATE
A fascinating animated demo in which you can alter the effects by pressing a few keys on the keyboard.

STD
A useful utility to search for telephone STD codes or find a town from its STD code. A ReadMe file is included in the program.

WANDA
A novelty demo program that infests your desktop screen with a shoal of bubble-blowing goldfish!

This month we are offering ten new discs from our Public Domain Library. Further titles will be added in the future. We also offer a **Sampler** disc with a selection of public domain programs from all areas of interest.

Our Public Domain discs contain as near as possible to 800k (and not less than 700k). Each disc includes a 'Read Me' file, and there are some instructions with the programs.

It is our policy with our Public Domain Library that the Public Domain discs are available only to RISC User members for **£3** (postage is £1 for the first disc and 50p for each additional disc). The discs are offered as seen, and we cannot enter into any discussion regarding their contents.

To order phone (0727) 40303, Fax (0727) 860263, or write to (quoting your membership number):

RISC Developments,
117 Hatfield Rd, St. Albans, Herts AL1 4JS

UTILITIES AND APPLICATIONS

PD 28 Disc
Contains 20 utilities of various types. There is something here no doubt toplease everyone. Space does not permit full descriptions but the file listis, 1stFile, ASm2, CloseUp, Crypt, Dir, Display, Drawlink, Dustbin,Filetypes, FileUtils, Find, Keys, Loadprogs, MultiPrint, NewBar, NewCodes, PD _Impress, PrinterTx, ProgCalc, and Set_Type.

PD 31 Disc
Contains 17 utilities and applications. There is plenty on thisdisc to choose from and should find favour with most people. Briefdescriptions of the list is as follows: Address Book, Address Labeller, DiscSpace Display. Desktop Calendar, Cassette Inlay Printer (Two of these!), DFSDisc Reader, Automatic Application Creator, Arc to Psion Transfer, ROMSpeed-Up, STD Codefinder, System Utilities, Trash Can, Front end for Twin,Front end for View, Volume Controller, Control of Pointer by keys.

CLIPART AND PICTURES

PD 29 Disc
Contains over 4 megabytes of Sprite pictures which can be used as clip art to load into DTP or use in your programs. The files are naturally in a compressed form and the disc contains the file to uncompress them and has instructions.

PD 30 Disc
Contains over 2 megabytes of Sprite clip art and Draw files to load into DTP or use in your programs. The files are naturally in a compressed form and the disc contains the file to uncompress them and has instructions.

FONTS

PD 35 Disc
Contains eleven PD outline fonts for use in RISCOS applications such as WPand DTP. These are, Stencil, American Typewriter, Bodoni, Brushscript,Cooper Black, Fritz Quad, Garamond, Hull, London, Optima and Revue.COMMS

PD 34 Disc
Contains Arcterm3, a full comms software package. Arc100, ascrolling text terminal. Grapevine, another scrolling text terminal butmulti-tasking. TaskData, a multi-tasking viewdata comms package. Download,an application for transferring files between machines via serial port.Timer, a utility for recording on-line time and call cost. The latestversion of Sparkplug, the file decompression program. Along with these is acomplete set of programs for running a bulletin board system on your Archimedes.

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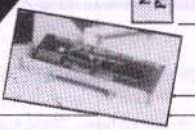

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by David Taylor

Printing Proportional Text Using Edit

Ever since I purchased my Epson LQ-550 24-pin printer last year it has been nagging my conscience that an important feature of the machine was being wasted, namely the ability to produce proportional script which can be left or right aligned, centered or fully justified completely within the printer itself. I had been using 1st Word Plus, which cannot turn on the proportional text facility of the printer, but justifies its printout by sending extra spaces to the printer.

I now have Impression, which produces truly beautiful printout via the Acorn printer driver PrinterDM, but it does take up to eight minutes to print out an A4 page. This is excessive if I only want to send a letter or produce a simple document. The draft mode printer driver included with Impression produces even rougher printout than 1st Word Plus, and there is still no way to make use of the proportional printing facility on my printer.

Figure 1. Part of StyleCodes file

The solution I have arrived at is to write my letters using Edit. The codes to control the printer are simply included in the text. This is not "What you see is what you get" but as Edit is included on the Applications discs with every Archimedes it costs you nothing. I keep a skeleton letterhead file on my letters disc with all the necessary codes already in place. I have also made a text file which I call *StyleCodes* containing details of all the commands that I am likely to need to control the printer (see figure 1).

While I am writing, I have a second window open containing StyleCodes in a corner of the screen showing two or three commands only. This is scrolled up or down smoothly, if required, by clicking on the up or down arrows. The control codes contain hexadecimal characters, some of which can only be put into Edit using *Find* (F4) and *Magic characters*, since a number of control codes are recognised by Edit for other purposes. Since they are already in the StyleCodes window it is easy to select the code required and copy it to the cursor in the work document using Ctrl-C. Then use Ctrl-Z immediately to clear the selection before you forget.

Very few codes are really essential to establish proportional printing. It is important to set the margins. To set the left margin to eleven characters, the command is Escape l 11 (that's a lower case 'L' followed by eleven). Eleven is 0B in hexadecimal. To put this into the StyleCodes file in the first place mark the position in the file where you want it, say with an '@'. Ensure the caret is anywhere before this '@', and then press F4 to get the *Find* dialogue box. Make sure that *Magic characters* is selected. A blue star shows that it is turned on. On the top line (against *Find:*), enter the '@'. Replace with \x1bl\x0b, and then click on 'Go'. When '@' is found, click on *Replace*, followed by *Stop*.

Escape l 11 will appear in the text window as [1b]l[0b] replacing the '@' character. This code sets the margin and does not appear in the printed text. The other codes can be produced similarly. Note

that the right-hand margin is set from the left-hand side of the page. Then turn proportional printing on. Set the alignment or justification if you do not want the left align default. Fully justified text must be typed without any carriage returns. The resulting quality of the proportional script and the time saved makes the effort of finding out how to do it well worthwhile. It helps if you can put the screen into an overscan mode such as Computer Concepts' mode 66 which comes with Impression, as you have to put up with fewer words broken at the end of the line on the display.

When the document is complete, it can be saved as a normal text file and printed by dragging its icon from the directory viewer or from the *Save as* box to the PrinterDM icon on the icon bar (or whatever printer driver is appropriate for your printer). Printing is at the full speed of the printer, about 90 seconds for an A4 page on my LQ-550.

TEST EXAMPLE

This example of fully justified proportional text is a test piece of text being used to try out several features of the !Edit utility in conjunction with PrinterDM and the !Skrive printer driver for the Epson LQ-550 dot matrix printer. This text has hopefully been in bold script.

Bold is cancelled.
Oblique selected.

It is expected that the script is no longer in bold but rather in a normal italic or oblique script but still in proportional text.

Oblique is cancelled.

Superscript has now been selected. Change to Subscript

This cancels Superscript and subscript and returns us to normal size proportional script.

Now we should be in expanded proportional text which will be fully justified if we type it in without any carriage returns.

Cancel Double-width

Cancel Condensed Mode

Sample of proportionally spaced text

*Our latest software release, **DeskEdit**, is a multi-purpose text editor with very many improvements over Acorn's Edit. Among its features is the ability to enter control codes, as described in this article, simply and without the necessity to use the Find/replace functions.*

Simple Text Printer Utility

The Acorn printer drivers are a truly marvellous concept. The graphics capability is excellent. To print a simple text file, however, they are like using a roadroller to kill a snail. PrinterDM and its modules occupy 177k of valuable memory space and take eight seconds to load from a floppy disc. I have written my own bare-bones printer utility to handle only text files and print them in proportional text on the LQ-550. This loads in less than two seconds, occupies only a 16k WimpSlot and clears completely from memory when quit.

The program, called *Skrive*, is designed to run as a multi-tasking application, and so you will need to create an application directory called *!Skrive* in the usual way, together with a !Sprites file and a !Run Obey file containing the following lines:

```
IconSprites <Obey$Dir>.!Sprites
WimpSlot -min 16K -max 16K
Run <Obey$Dir>.!RunImage
```

Listing 1 forms the !RunImage program, which is in Basic and should therefore prove easily adaptable for anyone wishing to produce a version to suit his own requirements. The translation table in the listing includes only English and German characters which are the ones I normally use. However, any other languages could be incorporated by amending the program as detailed below.

Line 380 sets the international character set to Germany. By altering *CHR$2* to another value a different set can be used instead (e.g. *CHR$1* for French, *CHR$7* for Spanish - see your printer manual for details). Then lines 460-520 translate the actual Archimedes character codes into the codes needed by the printer. To amend these lines, you will need to work out the ASCII code in the Archimedes set for the character you want (e.g. in line 460 of the listing, &C4 is the code for an umlauted A, while &FC produces an

umlauted u) and insert this in the WHEN statement. Then look up your printer manual to see which code produces this character once the required country has been set, and insert this into the print command (e.g. code &5B prints the umlauted A, while &7D prints the umlauted u).

Once the program is installed, dragging any text file (type &FFF), Exec file (&FFE) or Obey file (&FEB) to the icon bar icon will cause it to be sent to the printer.

*We are about to release a new software product, **PolyGlot**, which provides a fast and simple way to enter characters from any specified language into any text or DTP document. PolyGlot will also generate automatically the code translation data to enable a standard RISC OS printer driver to handle international characters.*

```
  10 REM            >!RunImage
  20 REM Version    A1.0
  30 REM Author     David Taylor
  40 REM RISC User  October 1991
  50 REM Program    Subject to copyright
  60 REM            NOT Public Domain
  70 :
  80 DIM b% 256, menu% 1000
  90 SYS "Wimp_Initialise",200,&4b53415
4,"Skrive"
 100 quit%=0:words%=0
 110 print%=0:Esc$=CHR$(27)
 120 PROCicon
 130 ON ERROR PROCerror
 140 REPEAT
 150 SYS "Wimp_Poll",&1833,b% TO reason
%
 160 CASE reason% OF
 170 WHEN 6: PROCMouse_Click
 180 WHEN 9: quit%=TRUE
 190 WHEN 17,18: PROCreceive_message
 200 ENDCASE
 210 UNTIL quit%
 220 SYS "Wimp_CloseDown"
 230 END
 240 :
 250 DEF PROCicon
 260 !b%=-1:b%!4=0
 270 b%!8=0:b%!12=68
 280 b%!16=68:b%!20=&1700001a
 290 $(b%+24)="!skrive"
 300 SYS "Wimp_CreateIcon",,b%
 310 ENDPROC
 320 :
 330 DEF PROCprint(file$)
 340 *FX 229 0
 350 words%=OPENIN(file$)
 360 print%=OPENOUT("Printer:")
 370 REM initialise printer
 380 BPUT#print%,Esc$+"@";
 390 REM Country Germany
 400 BPUT#print%,Esc$+"R"+CHR$2;
 410 REM proportional mode on
 420 BPUT#print%,Esc$+"p"+CHR$1;
 430 REM left margin set
 440 BPUT#print%,Esc$+"l"+CHR$10;
 450 REM right margin set
 460 BPUT#print%,Esc$+"Q"+CHR$73;
 470 REPEAT
 480 byte%=BGET#words%
 490 CASE byte% OF
 500 WHEN &a3:BPUT#print%,Esc$+"R"+CH
R$3+CHR$&23+Esc$+"R"+CHR$2;:REM FALSE
 510 WHEN &c4:BPUT#print%,&5b:REM
STRING$(
 520 WHEN &d6:BPUT#print%,&5c:REM CALL
 530 WHEN &dc:BPUT#print%,&5d:REM DATA
 540 WHEN &e4:BPUT#print%,&7b:REM GOSUB
 550 WHEN &f6:BPUT#print%,&7c:REM
REPORT
 560 WHEN &fc:BPUT#print%,&7d:REM TRACE
 570 WHEN &df:BPUT#print%,&7e:REM DRAW
 580 OTHERWISE: BPUT#print%,byte%
 590 ENDCASE
 600 UNTIL EOF#words%
 610 PROCEndPrint
 620 *FX 229 1
 630 ENDPROC
 640 :
 650 DEF PROCEndPrint
 660 IF words% CLOSE#words%:words%=0
 670 IF print% THEN
 680 BPUT#print%,Esc$+"@";
 690 CLOSE#print%:print%=0
 700 ENDIF
 710 ENDPROC
 720 ;
 730 DEF PROCMouse_Click
```

```
  740 $menu%="Skrive":menu%!12=&00070207
  750 menu%!16=100:menu%!20=44:menu%!24=
0
  760 menu%!28=&80:menu%!32=-1
  770 menu%!36=&07019031:$(menu%+40)="Qu
it"
  780 SYS "Wimp_CreateMenu",,menu%,!b%-6
0,140
  790 ENDPROC
  800 :
  810 DEF PROCreceive_message
  820 LOCAL ptr%
  830 CASE (b%!16) OF
  840 WHEN 0: quit%=TRUE
  850 WHEN 3
  860  IF b%!40=&fff OR b%!40=&feb OR b%
!40=&ffe THEN
  870   ptr%=b%+44:WHILE ?ptr%:ptr%+=1:E
NDWHILE:?ptr%=13
  880   b%!12=b%!8:b%!16=4:SYS "Wimp_Sen
dMessage",17,b%,b%!4
  890   PROCprint($(b%+44))
  900  ENDIF
  910 ENDCASE
  920 ENDPROC
  930 :
  940 DEF PROCerror
  950 PROCEndPrint
  960 !b%=ERR
  970 IF ERR=17 THEN
  980  PROCEndPrint
  990  $(b%+4)="Escape pressed (print ca
ncelled)"+CHR$0
 1000  SYS"Wimp_ReportError",b%,&10,"Tex
t printer"
 1010 ELSE
 1020  $(b%+4)=REPORT$+" (Error code "+S
TR$ERL+")"+CHR$0
 1030  SYS"Wimp_ReportError",b%,&01,"Tex
t printer"
 1040 ENDIF
 1050 ENDPROC
```

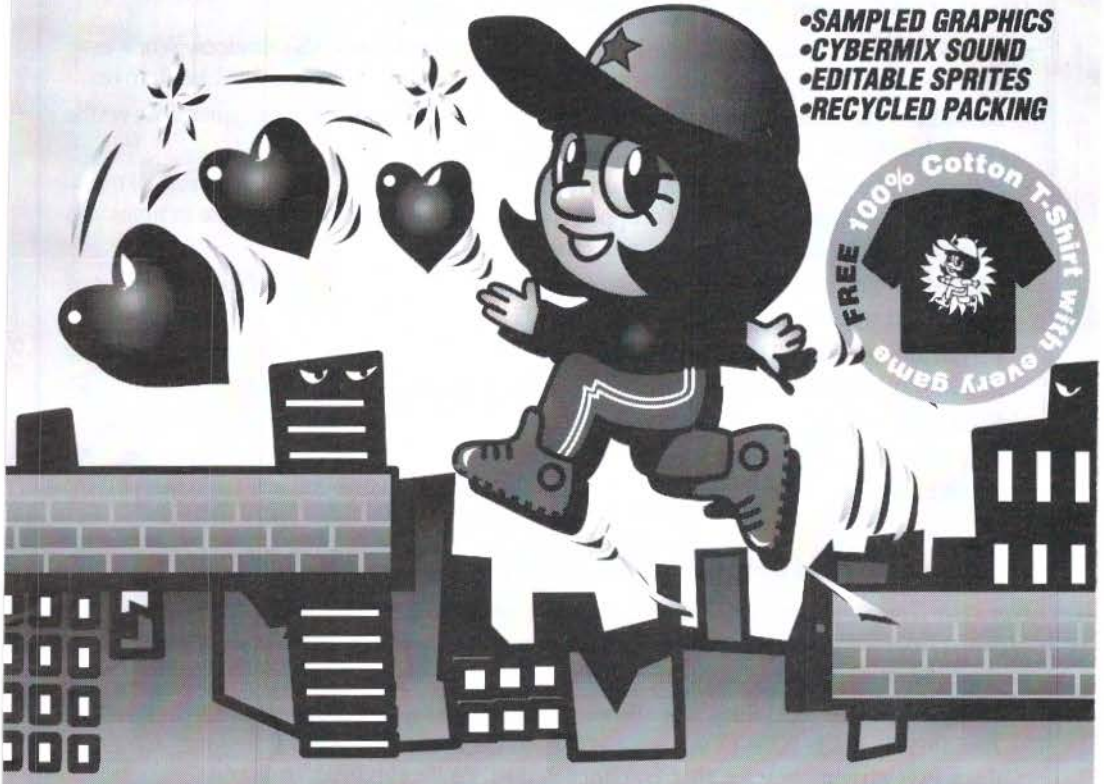
RU

Putting Your Monitor to the Test (continued from page 23)

```
  850 GCOL X% TINT G%<<6
  860 RECTANGLE FILL xs*4*G%,0,xs*4,200
  870 NEXT
  880 REPEAT UNTILGET=32
  890 IF MODE=15 MODE12 ELSE MODE MODE-1
  900 ENDPROC
  910 :
  920 DEF PROCtest5
  930 CLS:PROCsetc(0,7)
  940 VDU23,16,1,&FE|
  950 SYS &35,-1,1 TO ,,X%
  960 SYS &35,-1,2 TO ,,Y%
  970 FORF%=1TO(X%+1)*(Y%+1)
  980 VDU RND(94)+32:NEXT
  990 B%=0:F%=7
 1000 REPEATA=GET
 1010 IF A=136 F%=F%-1-8*(F%=0)
 1020 IF A=138 B%=B%-1-8*(B%=0)
 1030 IF A=137 F%=F%+1+8*(F%=7)
 1040 IF A=139 B%=B%+1+8*(B%=7)
 1050 PROCsetc(B%,F%)
 1060 UNTIL A=32
 1070 ENDPROC
 1080 :
 1090 DEF PROCtest6
 1100 MODE MODE
 1110 GCOL128:CLG
 1120 SYS &40093,,0,1,6,&FFFFFF00,0
 1130 FORF%=1TO5
 1140 SYS &40081,,"Trinity.Medium",6*16*
F%,6*16*F% TO H%
 1150 SYS &40092,H%,0,1,6
 1160 SYS &40086,,"A Line Of Sample Text
",16,100,F%*(ysize/8)
 1170 SYS &40082,H%
 1180 NEXT
 1190 REPEAT UNTIL GET=32
 1200 MODE MODE
 1210 ENDPROC
 1220 :
 1230 DEF PROCreadcolours
 1240 FORF%=0TO7
 1250 SYS &2F,F%,16 TO ,,C%:C%=C%>>8
 1260 Red(F%)=C% AND 255:C%=C%>>8
 1270 Green(F%)=C% AND 255:C%=C%>>8
 1280 Blue(F%)=C% AND 255:NEXT
 1290 ENDPROC
 1300 :
 1310 DEF PROCsetc(A%,B%)
 1320 VDU19,0,16,Red(A%),Green(A%),Blue(
A%)
 1330 VDU19,7,16,Red(B%),Green(B%),Blue(
B%)
 1340 ENDPROC
```

RU

TOP BANANA



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- **!Draw+** is an updated version of !Draw with many extra features including keyboard short-cuts. (Also on Careware Nº 13, £7.00.)
- **Keystrip printer** – Creates !Draw keystrip from an !Edit file of the text. (Shareware Nº32, £3.50 – also has a lot of other DTP stuff on it.)
- **Golf** – an excellent implementation with full sound & graphics. (Shareware Nº41, £3.50)
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The 80 Column

A Printer Driver Page Margin Calculator

We are devoting this month's column to a useful hint by Ben Avison, with the help of a program from Glynn Clements.

PRINTER DRIVER MARGINS

Most users have probably never altered the margin settings on their RISC OS printer driver, having assumed that the margins will be correct for their printer. However, if the margin setting is too small, you can sometimes lose part of the image; if too large, then you are not being permitted to use all of the space that you could.

The physical print margins on the printer may be different for each individual type and model, and it may be that the default margin settings on your printer driver are not giving you the optimum performance.

The program listed here sends a test page, consisting of a horizontal and vertical ruler calibrated in millimetres, to any RISC OS printer driver. Sending this to the driver will enable you to read off the value of the point at which the printer cuts off the image at each edge of the paper. It will work with any size paper, provided that the page size has been correctly set by the printer driver control application.

For the left and bottom margins, transfer these values directly to the margin settings in the *Page size* dialogue box. For the top and right margins, subtract the value from the page height and width respectively (which are also shown in the same dialogue box). Now click on *Save choices*, and the printer driver will be set up for future use with the optimum margins for your printer.

The program requires Corpus Medium font in order to mark the calibrations.

```
  10 REM            >!RunImage
  20 REM Program    PrintCal
  30 REM Version    A1.0
  40 REM Author     Glynn Clements
  50 REM RISC User October 1991
  60 REM Program    Subject to copyright
  70 REM            Not Public Domain
  80 :
  90 *If "<Font$Path>" = "" Then Error
0 Fonts cannot be found
 100 *RMEnsure ColourTrans 0.00 RMLoad
System:Modules.Colours
 110 *RMEnsure PDriver 0.00 Error 0 No
printer driver installed
 120 han%=0:font%=0:printing%=FALSE
 130 ON ERROR PROCerror:END
 140 DIM temp% 15, path% 31
 150 path%!0=2:path%!12=8
 160 path%!24=0:path%!28=32
 170 DIM rect% 15, trans% 15, point% 7
 180 cv=180/25.4
 190 SYS "Font_FindFont",,"Corpus.Mediu
m",12*16,12*16 TO font%
 200 han%=OPENOUT("Printer:")
 210 IF han%=0 ERROR 1,"Printer busy"
 220 SYS "PDriver_PageSize" TO ,w%,h%
 230 pw=w%/400:ph=h%/400
 240 rect%!0=0:rect%!4=0
 250 rect%!8=pw:rect%!12=ph
 260 trans%!0=&10000:trans%!4=0
```

continued on page 60

Base 5

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Into the Arc

Under the Desktop (2)

Mike Williams continues his exploration of the commands available once you step outside the Desktop.

Last month we concentrated on those commands which fall within the 'Miscellaneous' section in the User Guide. Some of these commands I have deliberately omitted from the discussion, as they are too specialised in my view to warrant coverage within this series. But there is one which can be very useful, and for which we did not have the space last month. That's the **Key* command, and there's quite a lot to say on this as you'll see.

Just as a reminder, remember that we can leave the Desktop by pressing F12, entering commands in response to the command line prompt (the '*'), and returning to the Desktop by pressing Return on its own in response to this prompt.

FUNCTION KEY DEFINITIONS

Many Wimp applications use the function keys, often as short cuts to various operations. You can also use the function keys by programming them to generate character strings and command sequences of your choice. The command *Key is followed by the key number (e.g. 1 for F1) followed by the character string or command sequence. Note that function key 0 is labelled 'Print', but it can be programmed just like the others.

This facility can be used in a variety of contexts, but in general programming a function key is useful whenever the same information is likely to be needed on more than one occasion. Programming a function key means that a simple one-key press is all that is needed, particularly useful when the 'information' is lengthy or complex.

For example, a function key could be programmed with your name and address. Thenceforth, at any time that you are writing a letter (using word processing, DTP, or whatever) just a single key press is all that is needed to enter this text into your document at the current position of the caret (provided that the text processor allows you to program the function keys). Here is what it might look like in practice:

```
*Key 1 Joe Bloggs|M123 Main Street,|M
Wigpoole,|M Dorset BH2 1JT.|M
```

This will program key F1 to generate the address you see above. There is one important point that does need explanation, and that is the '|M' pair of characters which appears in several places. Any command entered at the keyboard is terminated by pressing the Return key. At that point the complete command string is sent to the CLI (Command Line Interpreter). However, we also want a 'Return' to occur after each line of the address. If we simply press Return at the appropriate point, as the *Key command is entered, RISC OS will take that as terminating the *Key command itself.

Thus an alternative way is needed, and that is the '|M' pair. Return is in a group of ASCII codes (range 0 to 31) known as control codes. All control codes can be entered from the keyboard by pressing 'Ctrl' together with a corresponding letter key. Return is the same as Ctrl-M. The next time you need to press Return, try pressing Ctrl-M - the result should be exactly the same. All control codes can be entered in the same way, and they are listed at the beginning of the section in your User Guide devoted to VDU commands (page 417 in my edition).

However, pressing Ctrl-M when entering a *Key command is no better than pressing the Return key. Instead, the corresponding letter for the control code is

preceded by the '|' (bar) character (immediately to the left of the cursor-left key - and you will need Shift as well). When the function key F1 is subsequently pressed, each of the '|M' pairs is converted into a Return character at that time, and all works as expected.

Any control code can be included in a function key definition in the same way, but Return represented by '|M' is by far the most likely one that you will need. Here are some more examples. If you are working in Basic, it can be very helpful to program a function key to select your default screen mode, set paged mode, and list the program (or maybe enter Basic Edit). Here is a suitable function key definition:

```
*Key 1 MODE12|MVDU14|MLIST|M
```

This assumes mode 12 is being used. The VDU14 command sets paged (rather than scrolling) mode for the screen (remember to press Shift to scroll the screen in this mode). This can be more neatly entered as:

```
*Key 1 MODE12|M|NLIST|M
```

The '|N' represents Ctrl-N, the alternative way of specifying paged mode, so the above definition is equivalent to typing at the keyboard:

```
MODE12<Return>
<Ctrl-N>LIST<Return>
```

Programming a function key would also provide a neat solution to a small problem we encountered last time. Remember how *Country can be used to select keyboard layout and characters for a different country, and then the difficulty (in the chosen example) of entering *Country UK when you wanted to revert to normal because the 'Y' was no longer in its usual place. Programming a function key first such as:

```
*Key 1 *Country UK|M
```

would then allow you to press just F1 to return to the normal UK layout.

Programming a function key can also be useful if you have a regularly used sequence of star commands which you use. Simply program a function key with that sequence including a '|M' after each one. If you are going to do this in Basic, then each command will also need to be preceded by a '*', e.g.:

```
*Key 1 *DIR adfs::HardDisc4.$.Let91|M
*CAT|M
```

This would set the currently selected directory to 'adfs::HardDisc4.$.Let91', and catalogue that directory.

HOW AND WHEN TO PROGRAM FUNCTION KEYS

Once you have left the Desktop, by pressing F12, you can program any function key definitions directly from the keyboard. You can do the same from within Basic (or within a Basic program) by preceding the key definition with a '*'.

Function key definitions can also be included in a boot file (see *Creating a Boot Application* in RISC User Volume 4 Issue 5), and such definitions could also be included within any !Boot and !Run files contained within an application directory. Such boot files are best created with Edit, selecting the correct filetype (Obey) from Edit's icon bar menu.

EXAMINING FUNCTION KEY DEFINITIONS

Function key definitions are stored using so-called system variables Key$1, Key$2 etc. Thus if you want to check the current definition for a particular key, then you could type (as a star command):

```
*SHOW Key$n
```

where n is the key number. If the key is currently defined, then its definition will be displayed, otherwise there is no response. All function key definitions can be displayed with:

```
*SHOW Key$*
```

A function key definition can always be erased by defining a null definition, for example:

```
*Key 1
```

PROBLEMS WITH FUNCTION KEY DEFINITIONS

You are most likely to encounter problems with function key definitions if you are using applications which themselves make use of the function keys. For example, if you program function key 0 (i.e. the Print key) with your name (say) in command mode, then pressing that key will cause your name to appear (and an error message as RISC OS tries to find a file with your name!). Now install Edit and open a new text window. The caret will appear, but pressing the Print key will produce no effect at all. Now click with the Menu button over the text window, select the *Save* option, and the standard *'Save as'* box appears. Delete the default file name (by pressing Ctrl-U) and press that Print key again and your name will appear as the file name.

The explanation for this is that Edit uses many of the function keys for its own use as short cuts to menu operations (see *The Secret Life of Edit* in RISC User Volume 4 Issue 6), and even those which it doesn't appear to use are affected by Edit so that your own function key definitions are inoperative. So if you want to use a particular function key definition try it out first, but if it is to be used within some other application then do be prepared for it not to work for the reason given above. Incidentally, even if your function key definition is inoperative when used with another application, once you return to the CLI or your own program you should always find that your original definition still remains.

FUNCTION KEYS WITH SHIFT AND CONTROL

You are probably familiar with the fact that the function keys are often not just used on their own but in conjunction with the Shift and Ctrl keys to increase the range of functions available (see that article on Edit again). You can do this as well, and even use Shift-Ctrl-Fkey combinations too if you wish. All you have to do is to precede your function key definition(s) with one of the following (for keys F0-F9 only):

```
*FX225,1   Fkeys alone (the default)
*FX226,1   Shift-Fkeys
*FX227,1   Ctrl-Fkeys
*FX228,1   Shift-Ctrl-Fkeys
```

You must bear in mind, however, that there can be only one set of function key definitions; all you are doing with the *FX calls listed above is determining which key combination is needed to activate the definition.

It is also worth pointing out in conclusion, that although we have discussed here the ways in which function keys can be programmed and those definitions subsequently used, there are other ways in which function keys can be used. Multi-tasking applications which use the function keys, like Edit which we referred to earlier, do not program the function keys as described above, but use the Wimp Key-Pressed event. Non multi-tasking programs either set the function keys to generate ASCII codes, or detect function key presses using negative Inkey values (see Appendix C of the the *BBC Basic Guide*). ASCII code generation is controlled by the FX calls above, for example:

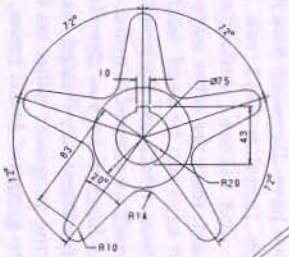
```
*FX226,128
```

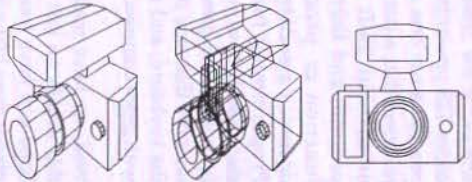
will cause the Shift-Fkeys to generate ASCII codes 128 upwards. Most non multi-tasking programs use one or other of these methods to detect that a particular function key (with or without Shift and/or Ctrl) has been pressed, and then to call an appropriate function or procedure to perform the operation associated with that function key. Programming function keys as we have discussed here is most useful where the same information or command sequence is needed on more than one occasion, and saves time at the keyboard, and avoids mistakes occurring with more complex input.

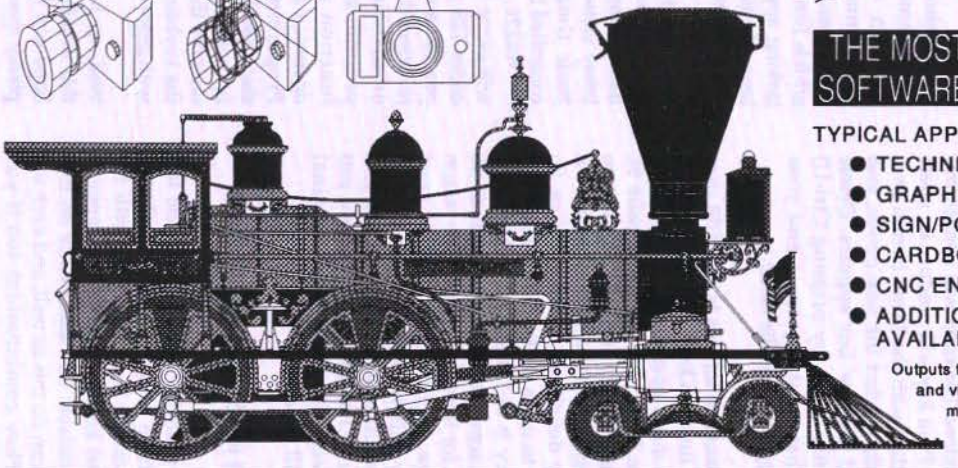
Well, we have managed to use all our space this month on just one star command, but I hope you have found it of interest. There are plenty more star commands, of course, which we can look at on a future occasion. RU

TECHSOFT

DESIGNER V.3







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C Notebook

News and Hints

by Lee Calcraft

ACORN'S ANSI C RELEASE 4

As we reported last month, ANSI C Release 4 is now available. Acorn are marketing it as *Desktop C*, and it forms a part of their so-called DDE suite. Last month's review gives full details. Since publishing this, Acorn have released a set of upgrade prices for users of ANSI C 1, 2 or 3, as follows:

Desktop C	£229
Upgrade from ANSI C 1 or 2	£105
Upgrade from ANSI C 3	£ 85

All prices exclude VAT, but include postage. The address to send to is:

Vector Services (Acorn Direct)
Freepost
13 Dennington Road,
Wellingborough,
Northants NN8 2RL.

As proof of purchase, you should include your old ANSI C disc (or disc no. 1 if there is a set).

The prices for the upgrade seem very reasonable indeed when you consider that it is not just the compiler which is being upgraded. You get new versions of CLib (3.75) and RISC_OSLib, both containing many bug fixes. The latter also contains a number of new functions. Additionally, you get an upgraded version of Edit (called Source Edit) with throwback and an improved "Find" option, together with a whole range of upgraded tools; and everything multi-tasks from the Desktop - even the interactive debugger. Well done, Acorn.

USING THE RELEASE 3 DEBUGGER

Simon Glass writes that you can use the non-multi-tasking debugger to help debug Desktop programs. The reason that you get no output is that you are in VDU5 mode. The solution, he says, is to type:

```
*echo <4>
```

to get into VDU4 mode, and you can use it as normal. Of course, it writes all over the screen, but once your program continues, you can use F12 Return to force a redraw.

SAVING COMPILER OUTPUT

In a previous issue we gave ways of saving compiler output. Mike Kinghan reminds us that the compiler has a *list* flag which solves the problem very effectively:

If you include *-list* in the *cc command tail, a full line-numbered listing is output, with errors and warnings annotated at the point of detection, in the $.user.list directory (Release 3 manual page 18). If you want the listed source to appear as written, rather than as seen by the compiler after the preprocessor pass, then add *-fu* to the command tail (page 29).

SHIFTING IS NOT LOGICAL

Arnold Bagshott writes to tell us that he has been caught out on occasion when using the Shift operator >>. It causes an arithmetic rather than a logical shift, so if you are operating on *signed* integers when you should really be using *unsigned*, you can run into trouble. For example:

```
int i=0xffff0000;
result=i>>16;
```

The value of *result* here is 0xffffffff, not 0x0000ffff. Since i is a signed integer, the arithmetic reinstates the sign bit as each bit is shifted to the right. If *i* and *result* were unsigned ints, the result would be 0x0000ffff.

CONTRIBUTIONS

Thanks for all your contributions. We will be publishing some of the slightly longer hints, and short listings in due course. In the meantime, if you have any short hints, please drop us a line. RU

```
  270 trans%!8=0:trans%!12=&10000
  280 point%!0=0:point%!4=0
  290 SYS"PDriver_SelectJob",han%,"Calib
rator" TO old%:printing%=TRUE
  300 SYS"PDriver_GiveRectangle",0,rect%
,trans%,point%,&ffffff00
  310 SYS"PDriver_DrawPage",1,temp%,0,0
TO more%
  320 WHILE more%
  330 SYS "ColourTrans_SetGCOL"
  340 SYS "ColourTrans_SetFontColours",0
,&ffffff00,0,6
  350 PROCline(pw/2,0,pw/2,ph)
  360 FOR i%=0 TO ph/cv:s%=2
  370 IF i% MOD 10=0 s%=4:SYS"Font_Paint
",,STR$(i%),&10,pw/2+6*cv,i%*cv
  380 PROCline(pw/2,i%*cv,pw/2+s%*cv,i%*
cv):NEXT i%
  390 PROCline(0,ph/2,pw,ph/2)
  400 FOR i%=0 TO pw/cv:s%=2
  410 IF i% MOD 10=0 s%=4:SYS"Font_Paint
",,STR$(i%),&10,i%*cv,ph/2+6*cv
  420 ENDIF
  430 PROCline(i%*cv,ph/2,i%*cv,ph/2+s%*
cv):NEXT i%
  440 SYS"PDriver_GetRectangle",,temp% T
O more%
  450 ENDWHILE
  460 SYS"PDriver_EndJob",han%
  470 SYS"PDriver_SelectJob",old%
  480 printing%=FALSE:CLOSE #han%:han%=0
  490 SYS"Font_LoseFont",font%:font%=0
  500 END
  510 :
  520 DEF PROCline(x0,y0,x1,y1)
  530 path%!4=x0*256:path%!8=y0*256
  540 path%!16=x1*256:path%!20=y1*256
  550 SYS "Draw_Stroke",path%
  560 ENDPROC
  570 :
  580 DEF PROCerror
  590 IF font% SYS "Font_LoseFont",font%
  600 IF han% CLOSE#han%
  610 IF printing% SYS"PDriver_AbortJob"
,han%:SYS"PDriver_SelectJob",old%
  620 ENDPROC
```

RU

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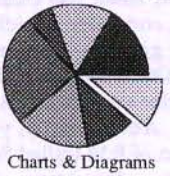

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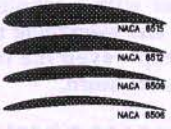

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Using ANSI C

Part 4: Menus and Dialogue Boxes

by Lee Calcraft

HANDLING MENU SELECTIONS

Last month we briefly discussed the way in which menu event handlers are registered. In our demo application, we registered the two functions i_premenuproc() which will be called whenever a menu is to be displayed; and i_menuproc() which is called in response to a user's menu selections.

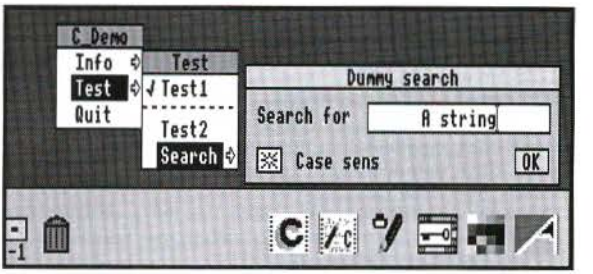
The number and type of parameters passed to i_menuproc() is defined in RISC_OSLib's definition of the function event_attachmenumaker(). Two are required, as follows:

```
void *handle and
char *hit
```

If you try to set up i_menuproc() with different parameters from these, you will get an error message during compilation to the effect that the pointer to i_menuproc(), which you are passing to event_attachmenumaker(), is of the wrong type.

Because this is a simple application, we do not need to make use of the handle for identification purposes, and can ignore it here. The character pointer *hit*, however, is most important. This contains information on what selection the user has made. hit[0] gives the entry in the top level menu which has been selected, hit[1] the selection in the second level sub-menu (if there was one), and so on.

We decode this by using nested switch structures in i_menuproc(). For example, if hit[0]=1 then we call the function cd_info_about_program() to put up an "About this program" dialogue box; and so on. The sequence of values hit[0], hit[1], hit[2] etc. tells us precisely the selection path that the user has taken. Note by the way that for the first item in a menu or sub-menu, hit[n] takes the value one rather than zero. If hit[n]=0, it means that no selection was made at this depth, and that you should look at hit[n-1] for a possible hit.



The Search dialogue box

DIALOGUE BOXES

The first item on our menu displays a standard "About this program" information window. This is achieved using the RISC_OSLib *dbox* suite of functions. In this case the dialogue box is a very simple one, and contains no icons which respond to user input. But as you can see from table 1, *dbox* contains a wide variety of functions tailored to handling most features of Wimp dialogue boxes. In consequence, if you need to display a dialogue box for any purpose in your program, it is generally much easier to use *dbox* than to write your own handler for a window.

When deciding which approach to adopt for a particular situation, the main restrictions on using *dbox* are that you have no control over where the dialogue box will appear - this is determined for you on the basis of the pointer or caret position. Secondly, as you would expect, a *dbox* dialogue box cannot contain any user-redrawn items. So the entire contents of a *dbox* window must consist of a number of

icons. Generally speaking these will be created using the Template editor, though you may alter the content of any icon from within the program. The "About this program" dialogue box provides a simple example of this (see the definition of cd_info_about_program()), and we will look at this briefly before working on a more complex dialogue box.

```
dbox dbox_new(char *)
void dbox_dispose(dbox *)
void dbox_show(dbox)
void dbox_showstatic(dbox)
void dbox_hide(dbox)
void dbox_setfield(dbox,dbox_field,char *)
void dbox_getfield(dbox,dbox_field,char *buffer,int size)
void dbox_setnumeric(dbox,dbox_field,int)
int dbox_getnumeric(dbox,dbox_field)
void dbox_fadefield(dbox,dbox_field)
void dbox_unfadefield(dbox,dbox_field)
dbox_field dbox_get(dbox)
void dbox_eventhandler(dbox,dbox_handler_proc,void *handle)
void dbox_raw_eventhandler(dbox,dbox_raw_handler_proc,void *handle)
dbox_field dbox_fillin(dbox)
dbox_field dbox_popup(char *name,char *message)
BOOL dbox_persist(void)
int dbox_syshandle(dbox)
void dbox_init(void)
```

Table 1. The dbox functions

The function dbox_new() is used to create (but not display) the dialogue box. It takes a single parameter: the name of the template to be used for the box. This will already have been loaded into a buffer by the call to template_init() early in the program. If the template cannot be found when dbox_new() is called, the user will be informed of the problem, and the task will automatically be aborted.

Assuming that all is well, our task creates a string containing the contents of the macro *VERSION*, and the special variable *__DATE__*. This holds the time and date of compilation. The function dbox_setfield() is then called to insert this string into the dialogue box before it is displayed. It is important to note that this function may only be used with indirected icons. The three parameters passed to the function are *d* (the pointer to the *dbox* structure), *cd_info_field* (the field into which the string is to be written), and *versionstring* (the required string). The value of *cd_info_field* in this case is 4. It is just the icon number of the icon into which we want to write this string, and it is obtained by examining the "progInfo" template.

Displaying and disposing of the dialogue box is handled by the three-function sequence:

```
dbox_show(d);
dbox_fillin(d);
dbox_dispose(&d);
```

The first places the dialogue box on the screen. The second is a more subtle function. It enters an event_process() loop, while repeatedly checking for appropriate user events related to the dialogue box. Thus, as far as the program is concerned, it just waits until the user does something appropriate with the dialogue box, but in actual practice, the Wimp is continuously polled during this time, so that other tasks do not come to a halt. Because of the complexity of this feature, all but the latest versions of RISC_OSLib exhibit the "Alarm+dbox=dead mouse" bug reported in last month's C Notebook.

Our piece of code makes very simple use of dbox_fillin() in that we are not checking on what the user's response was, we are just waiting for him to clear the box - either by pressing Escape or by clicking outside its perimeter. When this happens, we call dbox_dispose(). This not only removes the dialogue box from the screen, but kills it off completely. An alternative approach would be to call dbox_hide(). This would remove the dialogue box from the screen, but would keep its structure intact (together with any fields that we may have set up). Any call to dbox_show() would make it reappear. However, this approach requires that the dbox structure be globally defined, with consequent memory overheads etc.

A DUMMY SEARCH BOX

To illustrate the practical use of *dbox*, we will implement a dialogue box which might be used for a search routine. It provides a writable icon for the user to enter a search string, and a case sensitivity button. The search action is triggered by clicking on its OK button.

First of all you will need to create a suitable dialogue box using the Template editor. Alternatively, you might prefer to borrow a template from another application such as Edit, but designing your own is probably a better bet. In either case, the window identifier (as distinct from the window title) should be "Search" (this is case sensitive), and the finished Templates file should contain both the "progInfo" and the "Search" templates. Figure 1 shows what the Search template should look like. The numbering of the icons is important. The OK box should be icon number zero (create this first), the Case sensitive icon should be number 1, the writable icon, number 2, and the "Search for" text should be icon number 3.

The OK box is of button type "Menu" and must be set to an ESG of 1 or greater. It should have a cream background. The writable icon should be set to type "Writeable" (not "Write, click drag"), and should be made indirected with a length of say 20 characters. It would normally have a white background. The Case sensitive icon is the most tricky to set up. Of its icon flags, only the following four should be ticked:

```
Text          Sprite
V centred     Indirected
```

The Text entry should have the words "Case sens", but the Sprite entry should be left blank. Moving across the *Indirected* entry you should give the following validation string:

```
Soptoff,opton
```

This supplies the name of two alternative Wimp pool sprites (*optoff* and *opton*). The one used will reflect the selected state of this icon. Finally, set the Button type to *Radio*.

IMPLEMENTING THE CODE

We do not have sufficient space to implement all the code for this dialogue box, but we can make it perform the basic functions very easily. To do this, you will need to make the following alterations to the C source of the original C_Demo program:
Change the #define for the SUBMENU_ITEMS to:

```
#define SUBMENU_ITEMS "!Test1 Test2,
>Search"
```

Immediately beneath the line:

```
case i_tsubmenu_opt3:
```

in the definition of:

```
i_menuproc()
```

insert:

```
cd_search();
```

Finally you will need to incorporate the definition of the new function cd_search() given in listing 1. If you locate it above i_menuproc() you will not need a function prototype, otherwise the following will be required:

```
static void cd_search(void);
```

If you compile and run this, you will see that the third entry in the "Test" submenu is now called "Search", and has a right-pointing arrow. If you move the pointer across this, you will see the new dialogue box. It will remain on screen until you click on "OK", or in the area outside the box's perimeter (or until Escape is pressed). The value returned as a result of the user's actions is held in the variable *result*. No use is made of this yet, but you may like to experiment a little; perhaps using the *debug* application to display the results of your tests.

More on all this next month.

Listing 1

```
/* Function to display the "Search" */
/* dialogue box */

static void cd_search(void)
{
  dbox  d;        /* Dialogue box handle */
  int response;
  if (d = dbox_new("Search"), d != NULL)
  {
    dbox_show(d);          /* display it */
    response=dbox_fillin(d);
    dbox_dispose(&d);      /* remove it */
  }
}
```

RU

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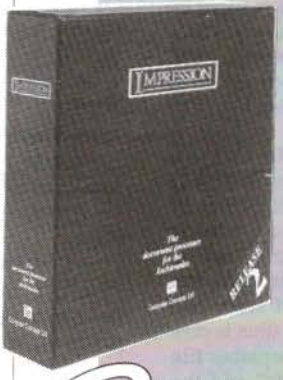

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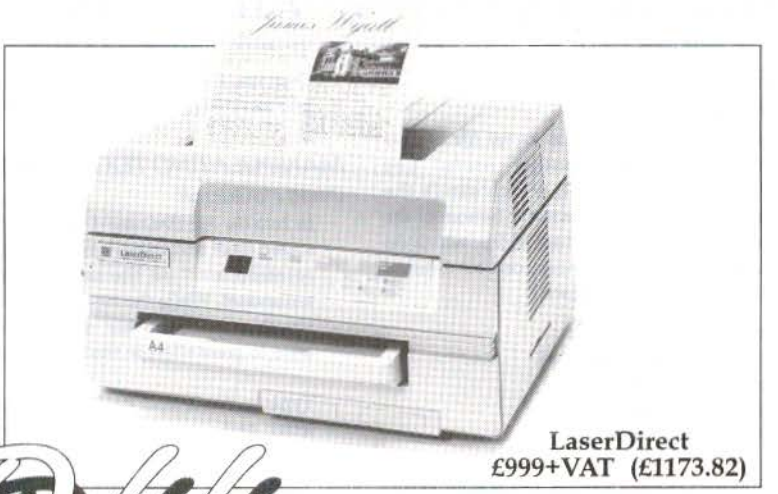

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MORE EDIT SECRETS

J. van der Post

Further to the article on the *Secret life of Edit* (Volume 4 Issue 6), another useful key combination is Ctrl-Print, which sends the window with the input focus to the bottom of the stack. Also a few Epson printer codes, which do not require Escape sequences, can be entered directly into the text, as follows:

Ctrl-O	Condensed
Ctrl-R	Cancel condensed
Ctrl-L	Form feed
Ctrl-N	Enlarged
Ctrl-T	Cancel enlarged

PREVENTING UNWANTED FORMATTING

Andrew Smith

It is sometimes useful to be able to prevent the formatting of discs, for example in schools. This can easily be done by using the following command, which could be contained within a boot file or log-on sequence:

```
*Set Alias$Format Free
```

Thus, every time that a **Format* is performed, the operating system is told to perform **Free* instead (you could of course substitute any other command you wish). Note that an error is generated if *Format* is selected from the Desktop because the drive number is not specified, but the effect is still to prevent the formatting.

You could also use the same method to intercept the **Notify* command (this is an Econet command which allows one network station to send a message to another).

IMPRESSION FRAME BORDERS

Martyn Fox

When using Impression, it is useful to be able to turn off the frame borders (with Ctrl-O) to check the layout of the page. One frame always remains visible, however - the one currently selected. To remove this, simply create a new frame somewhere then immediately delete it. There will now be no frame borders visible. The same procedure can be used equally well in Ovation, though if the document has a margin you can click in that to deselect all the frames.

MANIPULATING TEXT IN DRAW

David Houldcroft

In *Into the Arc* (Volume 4 Issue 7), Mike Williams stated that text cannot be rotated and that the rotation 'ear' on the selection box is in fact redundant. While the first part of the statement is strictly correct, the 'ear' under discussion *can* be used to great effect in the following manner.

Type in some text pressing Return after each letter, and you will now have a vertical line of text. Use *Select all* from the menu, and then *Group*. You will now find that while the orientation of the letters cannot be changed, use of the rotate 'ear' on the selection box can re-orient the line of text, often in a very useful way.

GRABBING MEMORY ON THE FLY

Lee Calcraft

The command:

```
WimpSlot -min xxK -max yyK
```

which is used in the !Run Obey file of applications to determine how much memory is allocated to that particular task, can also be used on other occasions. For example, suppose you have used the Desktop File Loader (Volume 3 Issue 6) to load a program into Basic directly from the Desktop. The amount of memory available will be that set in the !Run file of the application whose !RunImage program has been loaded.

If you want to edit such a program using a non-multi-tasking editor (e.g. Twin), which needs more RAM than is available, you can just issue a call to WimpSlot before calling the editor. For example, you could program a function key to set the WimpSlot and enter Twin as follows:

```
*Key1 *WimpSlot -min 512K -max 512K|M
Twino 8|M
```

The "|M" character pairs generate carriage returns when the function key definition is expanded.

The "|M" character pairs generate carriage returns when the function key definition is expanded.

COMBINING TEMPLATES FROM SEVERAL FILES

D.J. Scott

When using FormEd, one of the problems when designing templates for anything other than a trivial application is the number of templates which soon litter the screen, making it difficult to work on each one individually. This can be solved by creating and editing each template initially as a separate file. For convenience the file should be given the same name as the template identifier, and perhaps saved in a special directory reserved for template component files. An advantage of this is that the same template can be used for a number of different applications. In fact, several commonly-used templates (save box, info box etc.) can be obtained from Edit's template file by loading it into FormEd and deleting all those you do not want.

When all the individual templates have been designed and saved, load a clean copy of FormEd. Then load each required template by dragging its file icon to FormEd's icon bar icon. Finally, save the complete file, making sure you change the filename under which it is saved to the one you require.

Note that the latest version of FormEd (as supplied with the DDE) does not suffer from the problem described in this hint.

WATCH THIS SPACE

John West

The Archimedes keyboard can provide two different space characters, which look identical on the screen. The less well known non-blank space (NBSP) results when Alt-Space is pressed. This is actually ASCII character 160, and is treated as an entirely different character from the normal space, ASCII 32. For example, if you enter the following Basic line:

```
10 REM Wrong Space
```

with Alt held down while typing the spaces, then list the line, it will look like this:

```
10EVALREM Wrong Space
```

and attempting to run it will produce an error. This is because character 160 in a Basic program is treated as the token for the EVAL command (note however that after the REM statement top-bit-set characters are not treated as tokens).

One use for the NBSP is as a hard space or pad character when using a text editor such as Edit. This can be used to stop words being separated when a formatting option is applied. An easy way to detect the NBSP is to redefine the character. For example, to make it look like a dotted box, type:

```
*Echo <23><160>UAAAAAAU
```

USE OF BASIC'S STR$ FUNCTION

Lee Calcraft

When converting values to hex representation using Basic's STR$ function, the format STR$(~ n%) generates an "Unknown or missing variable" error. Either STR$~n% or STR$~(n%) will give the correct result.

USING A MOUSE WITH THE PC EMULATOR

Mike Kinghan

Most of the major DOS applications now have mouse support in addition to keyboard commands, and will detect the presence of the mouse driver. It is perfectly possible to use the Archimedes mouse with a DOS serial mouse driver software package under the PC Emulator. I have used both the IBM PS/2 mouse driver and the Logitech mouse driver with no problems. The IBM driver is rather slow and "clunky" even on my ARM3 machine; the Logitech driver however is entirely satisfactory.

Note that version 1.6 of the PC Emulator includes mouse driver software - see the review elsewhere in this issue.

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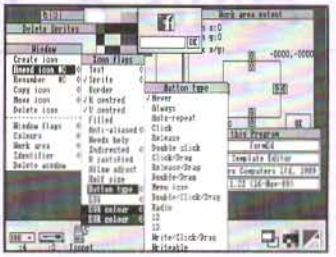

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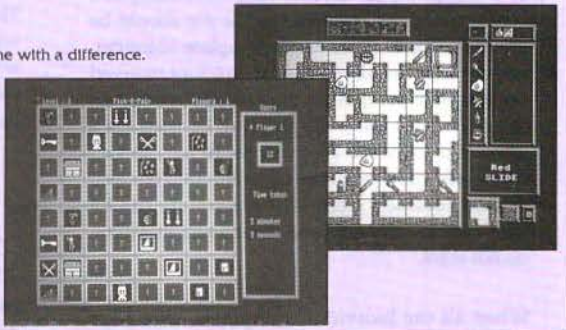

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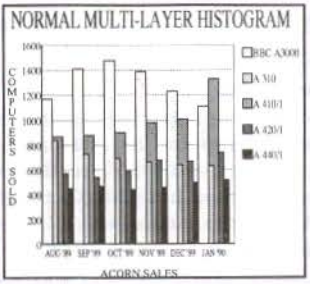

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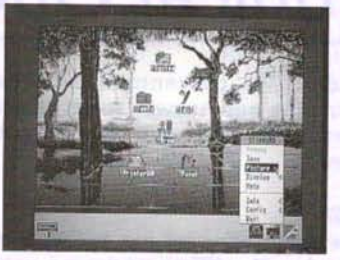

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Book

by David Spencer and Mike Williams

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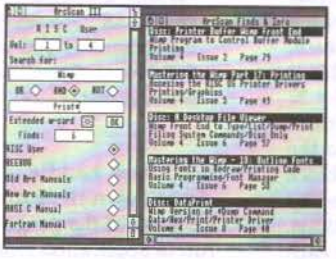

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Technical Queries ??

This month we concentrate on Wimp programming and answer some of your questions arising from our Mastering the Wimp series.

Dear Sir

I have been following the article in the ***Mastering the Wimp*** *series on using templates. My program has two templates, of which the first is a standard Info box. I have given this the title "About this program", but when I open it from within the program it has the title "file name:". Where am I going wrong?*

R. Harding

It appears as though you are using the same block of memory for the indirected data for each template, and part of the data from the second window is overwriting the first.

When you load templates from a file using SWI "Wimp_LoadTemplate", the block which is given as the parameter in R1 must be large enough to contain the window definition, plus all the icon definitions, plus any indirected data for that window. For example, a window entitled "About this program", with five icons, two of which contain an indirected string of 20 bytes each, requires a block of at least 309 bytes. This is made up of 88 bytes for the window, 5 x 32 bytes for the icons, plus 61 bytes for the three indirected strings (adding one byte to the length of each for the terminator). This block is simply a temporary storage area used by the Wimp when loading in the definitions, and so the same block can be used for each template. Clearly, it must be dimensioned for the largest window in the file.

Once the template is loaded, the Wimp transfers the indirected data to the storage area pointed to in R2. This, however, is a *permanent* storage area, and so each window needs its own indirected space. The best way to set this up is to add up the lengths of all the indirected strings in the template file (i.e. in every window you will be loading), and dimension the indirected buffer to the cumulative size. When you first use Wimp_LoadTemplate, pass the start of this buffer in R2, and the end in R3. On subsequent calls, use the value returned in R2 from the previous load as the new pointer to pass to R2. Thus each window's indirected data will be stored sequentially in the buffer. For a practical example of how to do this, see last month's *Hints & Tips*.

You now need to know how to find the location of any particular icon's indirected data for access within your program. This is done quite simply by using Wimp_GetIconState (or Wimp_GetWindowInfo for a window title bar, for example). In the case of icons, this returns the icon block at R1+8, and the address of the indirected text is to be found at R1+28. Note that, because this is a pointer to the text and not the text itself, to modify it you must access it as *$(block!28)*, and not *$(block+28)*.

Alan Wrigley

Dear Sir

The PRM gives the parameters for SWI "Wimp_CloseDown" as R0=task handle, R1="TASK". However, I notice that many of the programs you publish simply contain SYS "Wimp_CloseDown" with no parameters. Is this correct?

Bill Brown

If the task handle is not given, the Wimp closes down the currently active task. Thus for most of the programs we publish, which run in application workspace and at the time of executing the close-down will have been the last task to call Wimp_Poll, no parameters are needed. If the task is a module, however, the parameters should be given, since there is no guarantee that the module will be active when the call is made.

Alan Wrigley

Dear Sir

The series ***Mastering the Wimp*** *covered the creation of menus, but how can you tick*

and fade menu entries from within an application?

J.P.Dewar

It is all a question of setting the appropriate flags in your menu data block (see the PRM page 1226). Bit 0 of the menu flags determines whether an item is ticked or not, and bit 1 whether it has a dashed line beneath it (this is used as a separator). The bit which determines whether a particular entry is faded or not is in fact bit 22 of the corresponding icon flags - since each menu entry has both menu flags and a set of icon flags. To tick a particular entry, just read its menu flags, and logically OR them with 1: this will set bit zero. Then write back the value. To untick an item, just read its menu flag byte, and logically AND it with &FE: this will unset bit zero (regardless of its current value), and then write it back again.

Below is a procedure for setting the ticked, faded and dashed state of any menu entry. It takes five parameters: the address of the menu (or submenu) structure, the number of the item to be altered (0 for the first, 1 for the second, etc.), and the three required states in the order *ticked, faded, dashed*. Use a zero (FALSE) to unset any of these, or a -1 (TRUE) to set them.

Listing 1

```
   20 DEFPROCsetmenu(mblock%,item%,ticke
d%,faded%,dashed%)
   30 byte%=mblock%+28+24*item%
   40 flags%=?byte%
   50 IF ticked% THEN
   60 ?byte%=flags% OR 1
   70 ELSE
   80 ?byte%=flags% AND &FE
   90 ENDIF
  100 IF dashed% THEN
  110 ?byte%=flags% OR 2
  120 ELSE
  130 ?byte%=flags% AND &FD
  140 ENDIF
  150 byte%=mblock%+38+24*item%
  160 flags%=?byte%
  170 IF faded% THEN
  180 ?byte%=flags% OR 64
  190 ELSE
  200 ?byte%=flags% AND &6F
  210 ENDIF
  220 ENDPROC
```

If the menu structure is newly created each time that the menu button is pressed, as it is in the menu procedure PROCdrawmenu introduced in *Mastering the Wimp* part 10, you will need to make your calls to PROCsetmenu immediately before calling SYS "Wimp_CreateMenu" within PROCdrawmenu itself. But if you build the structure once only, maintaining it throughout the program, then you can use PROCsetmenu whenever appropriate, since the effect of ticking a particular item, say, will remain until it is unticked.

Lee Calcraft

Dear Sir
In a Wimp program that I am writing, I need to fully update the text in a window. How do I get the Wimp to do this?

Paul K Foster

The best way is probably to use SYS "Wimp_ForceRedraw". But before making the call, you will need to use SYS "Wimp_GetWindowInfo" to obtain the co-ordinates of the window to be redrawn. The following code should do the trick:

Listing 2

```
  240 !block%=handle%
  250 SYS "Wimp_GetWindowInfo",,block%
  260 xmax%=block%!20+block%!12-block%!4
  270 ymax%=block%!24+block%!8-block%!16
  280 SYS "Wimp_ForceRedraw",handle%,blo
ck%!20,ymax%,xmax%,block%!24
```

handle% is the handle of the window that you wish to update, and block% must be large enough to hold the window structure, complete with any associated icons, and indirected data.

Lee Calcraft RU

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SCIENTIFIC SOFTWARE

Thank you for publishing my letter in RISC User (Volume 4 Issue 8). It had a very gratifying response in that I was recommended a useful program called ChartDraw, written by Chris Johnson, and available from APDL, Thornaby, Cleveland. This package is completely compatible with Ovation as it has an option to save the resulting graph as a Draw file. At the moment it can only plot one set of data per axis, but it will fit the best straight line or curve. I understand that Dr.Johnson is hoping to update this package to accommodate more data sets per graph. I have also just bought the excellent statistical package First through Serious Statistical Software.

I am aware that Minerva's GraphBox might fulfil some of my requirements, but in the absence of a scientifically slanted review I am unwilling to pay £50 for a package I cannot try out first. Why don't more suppliers make available demonstration discs?

Dr.R.H.Cumming

Note that APDL's full address is 96 Limehouse Road, Thornaby, Cleveland TS17 8EA.

PRINTER DRIVERS AND FORMED

I was very interested to read an article in RISC User about improved printer drivers for the Arc. How do I get one? Also, wanting to write some Arc applications myself, it seems it would be useful to obtain FormEd, the template editor. Can you help?

Robin Murphy

Acorn released new versions (release 2) of the RISC OS Printer Drivers last year, and these were reviewed in Volume 4 Issue 3. PrinterDM and PrinterIx were included on the magazine disc for that particular issue (together with Acorn's FormEd), and the other printer drivers (PrinterLJ and PrinterPS) were included on the magazine disc for Volume 4 Issue 4 (all under licence from Acorn). A further article on the use of these printer drivers was published in RISC User Volume 4 Issue 8, and it is this article to which Dr.Murphy is probably referring. Note that FormEd is also supplied on our recently released Wimp Programmer's Toolkit which is an ideal adjunct for Wimp program development.

RISC USER

On seeing the ever-increasing width of RISC User magazines on my study shelf, I was tempted to terminate my subscription, as it seemed many articles were either unread or too esoteric for my needs. If other readers feel the same, then take what follows as a warning!

I recently purchased a new A440/1 with ARM3 and Taxan monitor, and was looking forward to some real action. I was horrified to find that, after a few minutes, the screen began to get "jittery". The Taxan manual suggests that the complete set-up be returned to the dealer. Being overseas this would be an expensive proposition.

However all was saved by consulting the index to volume 2 of RISC User where I found a simple modification which has totally cured the problem. Since finding this gem, several other tips have saved me time and money.

My advice to anybody wavering in their commitment to RISC User is to 'stick with it', and above all don't lose the indexes printed each year.

M.H.Brook

We have always viewed RISC User as forming a comprehensive guide to all aspects of the Archimedes, and each volume index is an indispensable aid to this end (ArcScan is, of course, the quickest method of finding all magazine references). The complete printed index for Volume 4 of RISC User will be sent out to all current subscribers with Volume 5 Issue 1.

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Original Archimedes software for sale; Alerion, Conqueror, Quazer, E-Type, UIM, Fish, Interdictor I & II, Nevryon (unboxed) worth £220, will sell for £100, will split. Tel. (0707) 46176.

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Plymouth user group. Anybody interested in forming an A3000 or Archimedes user group in the Plymouth area? Please get in touch with me, please send SAE with letter. The Plymouth User Group, 26 Luxmore Close, Leigham, Plymouth, Devon PL6 8NX.

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Base5	54
BEEBUG Software	4
Carvic	60
Clares Micro Supplies	72
Colton Software	16
Computer Concepts	64,65
David Pilling	28
Electronic Font Foundry	36
Lingenuity	46
Hex	51
Micro User	32
Norwich Computer Services	52
RISC User Magazine Disc Page	20,21
RISC User Members' Offers	76
RISC User PD Library	44,45
RISC User Products	38,39 & 68,69
Safesell Exhibitions Ltd	6
Serious Statistical Software	19
Skyfall PD	60
Spacetech	24
Techsoft UK Ltd	58
Trail Software	12

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